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CANCER FACTS & FIGURES 1983

AMERICAN CANCER SOCIETY®

Estimated number of new cancer cases in 1983 by state.
Total: 855,000* (excluding Puerto Rico)

*Excluding non-melanoma skin cancer and carcinoma in situ.
BASIS: CI RATES FROM NCI SEER PROGRAM (1973-1979)

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BASIC DATA

What is cancer?

Cancer is a large group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled or checked, it results in death. However, many cancers can be cured if detected and treated promptly.

How is cancer treated?

By surgery, X rays, radioactive substances, chemicals, hormones and immunotherapy.

Who gets cancer?

Cancer strikes at any age. It kills more children 3 to 14 than any other disease. And cancer strikes more frequently with advancing age. In the 1970's, there were an estimated 3.5 million cancer deaths, over 6.5 million new cancer cases, and more than 10 million people under medical care for cancer.

How many people alive today will get cancer?

About 66 million Americans now living will eventually have cancer; about 30%, according to present rates. Over the years, cancer will strike in approximately three out of four families.

How many people alive today have ever had cancer?

There are over 5 million Americans alive today who have a history of cancer, 3 million of them with diagnosis five or more years ago. Most of these 3 million can be considered cured, while others still have evidence of cancer. By "cured" is meant that a patient has no evidence of disease and has the same life expectancy as a person who never had cancer.

The decision as to when a patient may be considered cured is one that must be made by the physician after examining the individual patient. For most forms of cancer, five years without symptoms following treatment is the accepted time. However, some patients can be considered cured after one year, others after three years, whereas some have to be followed much longer than five years.

How many new cases will there be this year?

In 1983 about 855,000 people will be diagnosed as having cancer.*

How many people are surviving cancer?

In the early 1900's few cancer patients had any of hope of long-term survival. In the 1930's less than one in five was alive at least five years after treatment. In the 1940's it was one in four, and in the 1960's, until recently, it was one in three.

Today, about 320,000 Americans, or 3 out of 8 patients who get cancer this year, will be alive 5 years after diagnosis. The gain from 1 in 3 to 3 in 8 represents about 40,000 persons this year. This 3 in 8, or about 38% is called the "observed" survival rate. The observed survival rate is the proportion of people alive 5 years after diagnosis of cancer. When normal life expectancy is taken into consideration (factors such as dying of heart disease, accidents and diseases of old age) 46% will be alive 5 years after diagnosis. This is the "relative" survival rate, and is a more commonly used yardstick to measure progress against cancer.

Could more people be saved?

Yes. About 145,000 people with cancer will probably die in 1983 who might have been saved by earlier diagnosis and prompt treatment.

How many people will die?

This year about 440,000 will die of the disease — 1,205 people a day, about one every 72 seconds. Of every five deaths from all causes in the U.S., one is from cancer. In 1982 an estimated 431,000 Americans died of cancer. In 1981 it was 423,000; in 1980 the figure was 414,000.

What is the national death rate?

There has been a steady rise in the age-adjusted** national death rate. In 1930 the number of cancer deaths per 100,000 population was 143. In 1940 it was 152. By 1950 it had risen to 158 and in 1978 the number was 176. The major cause of these increases has been cancer of the lung. Except for that form of cancer, age-adjusted cancer death rates for major sites are leveling off, and in some cases declining.

Can cancer be prevented?

Some cancers, not all. Most lung cancers are caused by cigarette smoking, and most skin cancers by frequent overexposure to direct sunlight. These cancers can be prevented by avoiding their causes. Certain cancers caused by occupational-environmental factors can be prevented by eliminating or reducing contact with carcinogenic agents. Examples include bladder cancer among workers in the dye industry, and lung cancer in asbestos workers — especially those who are also smokers.

*These estimates of the incidence of cancer are based upon data from the National Cancer Institute's SEER Program (1973-1979). Non-melanoma skin cancer and carcinoma in situ have not been included in the statistics. The incidence of non-melanoma skin cancer is estimated to be about 400,000.

**Age-adjusted — a method used to make valid statistical comparisons by assuming the same age distribution among different groups being compared.

SOURCES OF STATISTICS

INCIDENCE

Since there is no national office which records every new cancer case, there is no way of knowing exactly how many new cases of cancer are diagnosed each year. In the past, estimates of cancer incidence were made by extrapolating from the experience of the few population-based cancer registries.

Estimates of incidence in *Facts & Figures* editions prior to 1974 were based on data from two state cancer registries. The issues from 1974 through 1978 used information from the National Cancer Institute's Third National Cancer Survey (1969-1971) of nine major areas of the United States.

Then in 1973, NCI began a new and larger program, gathering data from 11 population-based registries. It is called SEER, standing for Surveillance, Epidemiology and End Results.

Beginning with the 1979 edition of *Facts & Figures*, SEER incidence information has been used. Each time a new data base is introduced, there may be some sharp changes in figures, due to the more accurate data. The changes do NOT indicate either a cancer epidemic or miracle cure.

For valid comparisons between years, incidence statistics from the 1974 through 1978 editions of *Facts & Figures* may be compared with one another, while those from the 1979 and later editions may be compared.

The latest available information for this 1983 edition is SEER data from the years 1973-1979.

MORTALITY

The source for mortality statistics has remained constant over the years: the National Center for Health Statistics, Department of Health and Human Services.

The 1983 figures are estimates based on the latest available information, which includes mortality data through 1978.

Beginning with the 1981 edition of *Facts & Figures*, mortality rates per 100,000 population were age-adjusted to the 1970 census population, rather than the 1940 census population. Comparing these charts and figures with those of previous years may indicate false trends.

SURVIVAL

Because of the five-year waiting period, survival statistics take longer to compile.

Beginning with the 1982 edition of *Facts & Figures*, new information made it possible to compare 5-year survival rates for patients diagnosed in the early 1970's (1970-73) with those diagnosed 10 years earlier (1960-63).

The new data comes from the SEER program of the National Cancer Institute.

HOW CANCER WORKS

Normally, the cells that make up the body reproduce themselves in an orderly manner so that worn-out tissues are replaced, injuries are repaired, and growth of the body proceeds.

Occasionally, certain cells undergo an abnormal change and begin a process of uncontrolled growth and spread: One cell divides into two, those redivide into four, and so on. These cells may grow into masses of tissue called tumors — some benign and others malignant (cancerous).

The danger of cancer is that it invades and destroys normal tissue. At the beginning, cancer cells usually remain at their original site, and the cancer is said to be localized. Later, some cancer cells may invade neighboring organs or tissue. This occurs either by direct extension of growth or by becoming detached and carried through the lymph or blood systems to other parts of the body. This is called metastasis of a cancer.

This spread may be regional — confined to one region of the body — when cells are trapped by lymph nodes. If left untreated, however, the cancer is likely to spread throughout the body. That condition is known as advanced cancer, and usually results in death.

Because with each stage a case of cancer becomes progressively more serious, it is important to detect cancer as early as possible. Aids to early detection include cancer's Seven Warning Signals and the cancer risk factors.

CANCER RATES IN BLACKS AND WHITES *

A study of cancer rates over several decades shows that the cancer incidence rate for blacks is higher than for whites, and that blacks also have a higher death rate than whites.

Male incidence and mortality rates in each race increased, while female rates decreased.

The overall cancer incidence rate for blacks went up 27% while for whites it increased 12%. Cancer mortality has increased in both races, but the rate for blacks is greater than for whites. In the last 25 years, cancer death rates in whites have increased 9% while black rates have increased 34%. The rates were virtually the same 25 years ago.

Cancer sites where blacks had significantly higher increases in incidence and mortality rates included the lung, colon-rectum, prostate and esophagus. Esophageal cancer, long considered mainly a disease of males, declined in whites and rose rapidly in blacks of both sexes.

The incidence of invasive cancer of the uterine cervix dropped in both black and white women, although the incidence in blacks is still more than double that in whites. However, the rate for endometrial cancer — or cancer of the body of the uterus — for white women is double that of black women.

Survival for patients diagnosed between 1967 and 1973 was compared. More whites than blacks had cancer diagnosed in an early, localized stage when the chances of cure are best: 37% versus 28% for men, and 42% versus 31% for women.

A recent ACS-sponsored survey by the black-owned New York firm of Evaxx, Inc. showed that urban black Americans tend to be much less knowledgeable than whites about cancer's warning signals, and less apt to see a doctor if they experience those symptoms. Specifically, the blacks interviewed knew little about three of the cancers that have seen a sharp increase in mortality: colorectal, prostate and esophageal. The survey also showed that blacks tend to underestimate both the prevalence of cancer and the chances of cure.

In both studies, most of the differences between whites and blacks were attributed to economic, environmental and social factors rather than to inherent biological characteristics. Because a higher percentage of blacks than whites are in the lower socio-economic group, risk of exposure to industrial carcinogens is increased. Also, limited educational opportunities may prevent early detection because the less educated are less likely to know the importance of symptoms which could lead to an early diagnosis.

TRENDS IN DIAGNOSIS AND TREATMENT

Cancer management today is becoming increasingly individualized both with respect to diagnostic procedures and treatment. Early detection is followed by a precise staging of the disease, and the use of more than one kind of therapy, often in combination.

The following 14 cancers a few decades ago had poor prognoses. Today they are being cured in many cases, predominantly because of chemotherapy advances: acute lymphocytic leukemia, adult myelogenous leukemia, Hodgkin's disease, histiocytic lymphoma, Burkitt's lymphoma, nodular mixed lymphoma, Ewing's sarcoma, Wilms' tumor, rhabdomyosarcoma, choriocarcinoma, testicular cancer, ovarian cancer, breast cancer, osteogenic sarcoma. Other cancers are being more effectively controlled than in the past.

An outstanding example of progress is the improvement in the management of Hodgkin's disease (a cancer of lymph glands predominantly in young adults). Better disease staging in certain cases, more precise application of new and improved x-ray therapy and/or a combination of four cancer drugs has resulted in remarkably improved survival. In less than 10 years, the five-year survival rate for early cases rose from 68% to 90%, and from 10% to 70% for advanced cancers of this type.

The following developments indicate the directions of current and future research:

- Thymosin, a biological response modifier (see Research section), is produced by the thymus gland, the master gland of the body's immune system. Recombinant DNA has helped to synthesize several of the important thymosin hormones. A partially purified thymosin preparation called thymosin fraction 5 has shown promise when used with chemotherapy. It can significantly prolong the survival of patients with oat cell carcinoma of the lung, as well as with head and neck tumors following radiation therapy.
- A genetic fusing of cancer cells can produce disease-fighting "monoclonal antibodies"—specific antibodies tailored to seek out chosen targets on cancer cells. There are already monoclonal antibodies which are effective against malarial parasites, various strains of flu virus and hepatitis B virus.
- Experiments have been conducted with simple, inexpensive blood tests, in which unique proteins, enzymes, antigens and other substances are used as indicators to determine whether an individual has cancer, and in some cases, where it is. These tests are known by such names as GT-II, CEA and B-protein. Good preliminary results have been obtained in selected cases by using the procedures to detect

*Figures for cancer incidence are from the National Cancer Institute National Surveys, 1947-50 and SEER program 1975-76; those for cancer mortality from the National Center for Health Statistics, 1953-1978.

cancers of the breast, pancreas and other sites.

- Intense drug therapy before surgery has been successful in the treatment of children with bone tumors, and is being adapted to help fight some of the more common cancers in adults.
- A series of chemical injections near the spine can act as a nerve block, relieving certain cancer patients of debilitating pain.
- Retinoids, synthetic "cousins" of Vitamin A, have prevented bladder and breast cancers in mice and rats, and may also work against cancers of the lung, esophagus and pancreas in humans.
- About fifty drugs have been found effective against certain cancers, and others that are still being tested hold promise.
- Surgery now is more precise than in the past because of improved diagnostic equipment and laser instruments, and rehabilitation is improved through advances in plastic surgery.
- Common denominator approaches to cancer prevention may include the study and manipulation of "oncogenes"—cancer-causing genes which normally are dormant but which may be activated by radiation, chemicals and viruses. Researchers have learned how to suppress oncogenes in some animals, and are determining whether the same thing can be done in humans.
- A new technique makes high and potentially lethal doses of the cancer drug, methotrexate, safe and effective for the treatment of some cancers.
- Hyperthermia (the superheating of body tissues) is being used to increase the effectiveness of radiotherapy and chemotherapy.
- Many patients with bone cancer now are treated successfully by removing and replacing a section of bone rather than by amputating the leg or arm. Drugs and radiation therapy also are being used effectively following surgery, resulting in dramatic improvement in survival.
- High-frequency sound waves (ultrasound), instead of X rays, are being used to locate tumors deep in the body. For patients undergoing radiation therapy, ultrasound may enable the therapist to pinpoint the tumor more precisely in order to provide more accurate radiation dosage and location of the tumor.
- Immunotherapy holds hope of harnessing the body's own disease-fighting systems to combat cancer with essentially no major overt toxicity. In laboratory animals, substances such as BCG can stimulate immune mechanisms. These substances now are being used in humans alone or with other forms of treatment.
- Because environmental factors have been found for virtually every major cancer, it is becoming possible to "profile" individuals according to their cancer risk factors, and therefore select the most appropriate time for diagnostic tests.
- The transfusion of blood components is becoming increasingly available and effective for cancer therapy. Platelets are used to prevent hemorrhaging, white cells to treat infection as well as the cancer itself.
- Computerized tomography uses X rays to examine the brain and other parts of the body. Cross-section pictures are constructed which show a tumor's shape and location more accurately than is possible with conventional x-ray techniques.
- Many cancers are caused by a two-stage process through exposure to two different kinds of substances known as initiators and promotors. Researchers are exploring ways of interrupting the process, thereby preventing the development of cancer.

TRENDS IN SURVIVAL BY SITE OF CANCER, BY RACE
Cases Diagnosed in 1960-63 Compared to Those Diagnosed in 1970-73

	WHITE			BLACK		
Site	1960-63 Relative 5-year Survival (%)	1970-73 Relative 5-year Survival (%)	Increase	1960-63 Relative 5-year Survival (%)	1970-73 Relative 5-year Survival (%)	Increase
Prostate	50	63	13	35	55	20
Kidney	37	46	9	38	44	6
Uterine Corpus	73	81	8	31	44	13
Bladder	53	61	8	24	34	10
Colon/Rectum	41	48	7	31	35	4
Uterine Cervix	58	64	6	47	61	14
Breast	63	68	5	46	51	5
Ovary	32	36	4	32	32	0
Brain and Central Nervous	18	20	2	19	19	0
Lung and Bronchus	8	10	2	5	7	2
Stomach	11	13	2	8	13	5
Esophagus	4	4	0	1	4	3
Hodgkin's Disease	40	67	27			
Lymphocytic Leukemia-Acute	4	28	24			
Lymphocytic Leukemia-Chronic	35	51	16			
Non-Hodgkin's Lymphoma	31	41	10			
Larynx	53	62	9			
Tongue	28	37	9			
Melanoma of Skin	60	68	8			
Pharynx	24	28	4			
Thyroid	83	86	3			
Mouth	44	44	0			

Source: Biometry Branch, National Cancer Institute

ESTIMATED NEW CASES AND DEATHS FOR MAJOR SITES OF CANCER – 1983*

SITE	NO. OF CASES	DEATHS
Lung	135,000	117,000
Colon-Rectum	126,000	58,000
Breast	115,000	38,000
Prostate	75,000	24,000
Uterus	55,000**	10,000
Urinary	57,000	19,000
Oral	27,000	9,200
Pancreas	25,000	23,000
Leukemia	24,000	16,000
Ovary	18,000	12,000
Skin	17,000***	7,000

*Figures rounded to nearest 1,000.
**If carcinoma in situ is included, cases total over 99,000.
***Estimated new cases of non-melanoma about 400,000.
INCIDENCE ESTIMATES ARE BASED ON RATES FROM N.C.I. SEER PROGRAM 1973-1979.

NEW CANCER CASES – 1983

Estimated New Cancer Cases for All Sites plus Major Sites, by State – 1983

State	All Sites*	Major Sites								
	Number of Cases	Female Breast (Invasive)	Colon-Rectum	Lung	Oral	Uterus (Invasive)	Prostate	Stomach	Pancreas	Leukemia
Alabama	14,300	1,600	1,700	2,500	350	1,100	1,200	350	425	425
Alaska	600	50	50	125	15	30	20	20	10	20
Arizona	9,000	1,200	1,400	1,500	275	550	800	200	250	225
Arkansas	9,000	1,000	1,100	1,600	300	650	850	200	300	300
California	85,000	11,600	11,200	13,600	2,600	4,800	7,300	2,700	2,600	2,400
Colorado	7,600	1,000	1,100	1,100	175	400	550	200	250	250
Connecticut	13,000	2,200	2,000	1,900	450	800	1,200	400	400	400
Delaware	2,400	300	350	400	70	150	150	60	50	40
Dist. of Columbia	3,200	450	400	450	200	300	325	100	100	60
Florida	51,000	6,100	7,100	8,600	1,600	2,800	4,700	1,300	1,400	1,300
Georgia	17,300	1,900	2,000	3,100	600	1,200	1,700	400	450	500
Hawaii	2,400	300	300	350	100	125	150	200	60	70
Idaho	2,700	450	300	350	75	200	275	70	80	100
Illinois	44,000	6,000	6,700	6,900	1,500	2,700	3,600	1,400	1,300	1,200
Indiana	20,000	2,700	3,200	3,100	500	1,800	1,600	450	550	550
Iowa	11,200	1,500	2,300	1,600	300	800	1,200	300	350	400
Kansas	8,700	1,200	1,300	1,400	275	700	800	200	300	300
Kentucky	13,600	1,400	1,900	2,700	425	950	1,200	300	375	400
Louisiana	14,800	1,600	1,800	2,500	550	950	1,300	400	400	400
Maine	4,800	600	800	750	150	350	400	150	150	100
Maryland	16,700	2,500	2,400	2,600	650	1,100	1,500	400	400	400
Massachusetts	24,000	3,600	4,100	3,400	900	1,500	2,100	850	650	650
Michigan	32,000	4,300	4,500	5,100	950	2,200	2,900	900	850	900
Minnesota	14,000	2,000	2,200	1,900	375	800	1,600	500	450	475
Mississippi	8,900	850	1,100	1,600	250	600	1,100	275	300	300
Missouri	20,000	2,400	3,100	3,200	550	1,400	1,900	500	550	600
Montana	2,600	300	400	400	80	150	350	80	80	80
Nebraska	6,000	750	1,100	900	150	350	500	175	225	225
Nevada	2,600	300	300	475	60	150	150	20	60	40
New Hampshire	3,600	450	650	500	100	225	275	75	90	125
New Jersey	32,000	4,700	5,100	4,900	1,100	2,100	2,500	1,200	900	800
New Mexico	3,500	400	450	450	60	250	325	90	90	70
New York	74,000	11,500	12,500	10,700	2,600	4,800	6,000	2,800	2,400	2,000
North Carolina	20,000	2,600	2,700	3,200	650	1,400	2,100	425	600	500
North Dakota	2,500	350	400	275	50	125	300	100	80	70
Ohio	42,000	6,100	6,400	6,900	1,300	3,000	3,300	1,200	1,300	1,300
Oklahoma	11,600	1,300	1,600	2,100	375	650	1,000	300	325	325
Oregon	9,800	1,300	1,200	1,600	250	600	900	225	300	300
Pennsylvania	53,000	7,300	9,600	7,600	1,500	3,300	4,100	1,600	1,500	1,300
Rhode Island	4,700	650	850	700	200	300	400	200	150	80
South Carolina	9,600	1,200	1,200	1,600	350	800	950	200	300	250
South Dakota	2,600	400	450	375	50	150	300	80	90	100
Tennessee	17,100	1,900	2,200	3,000	550	1,100	1,500	350	500	475
Texas	44,000	5,300	5,400	7,300	1,500	2,700	3,800	1,300	1,200	1,400
Utah	3,000	450	400	275	60	225	300	80	80	80
Vermont	2,000	250	300	325	60	150	200	50	50	60
Virginia	17,200	2,300	2,300	3,000	550	1,100	1,500	425	475	425
Washington	14,400	2,000	2,100	2,300	450	800	1,400	375	425	450
West Virginia	7,700	850	1,000	1,300	200	600	650	200	250	200
Wisconsin	18,000	2,400	2,800	2,300	550	950	1,700	600	500	550
Wyoming	1,300	150	200	200	20	70	80	25	30	30
United States	855,000	114,000	126,000	135,000	27,000	55,000	75,000	25,000	25,000	24,000
Puerto Rico	6,000	450	450	350	425	750	400	500	100	175

*Does not include carcinoma in situ or non-melanoma skin cancer.

These estimates are offered as a rough guide and should not be regarded as definitive. They are calculated according to the distribution of estimated 1983 cancer deaths by state. Especially note that year-to-year changes may only represent improvements in the basic data.

CANCER DEATHS – 1983

Estimated Cancer Deaths for All Sites Plus Major Sites, by State – 1983

State	All Sites		Major Sites								
	Number of Deaths	Death Rate per 100,000 Population	Female Breast	Colon-Rectum	Lung	Oral	Uterus	Prostate	Stomach	Pancreas	Leukemia
Alabama	7,400	186	500	800	2,400	125	200	400	200	375	250
Alaska	300	69	20	30	100	5	10	10	10	10	10
Arizona	4,900	165	325	600	1,400	100	50	225	125	225	150
Arkansas	4,700	203	325	550	1,400	100	100	300	150	275	200
California	44,500	175	3,700	5,500	12,000	850	900	2,400	1,500	2,400	1,500
Colorado	3,900	124	325	550	950	70	70	225	125	225	175
Connecticut	6,700	210	650	900	1,600	175	125	325	250	350	250
Delaware	1,200	198	80	150	300	25	20	50	30	60	30
Dist. of Columbia	1,600	260	175	200	375	75	60	100	60	100	40
Florida	26,600	237	1,900	3,400	7,500	450	400	1,500	800	1,400	750
Georgia	9,000	155	650	900	2,700	200	250	475	225	425	300
Hawaii	1,200	118	75	150	300	30	20	40	90	60	50
Idaho	1,400	141	100	150	300	25	25	90	40	70	70
Illinois	22,500	195	2,000	3,100	5,900	500	600	1,200	750	1,200	900
Indiana	10,400	192	900	1,500	2,900	200	300	550	250	500	400
Iowa	5,700	199	500	1,000	1,500	100	125	375	150	325	275
Kansas	4,600	190	425	600	1,300	100	100	300	125	250	200
Kentucky	7,000	191	475	900	2,300	175	175	400	150	375	275
Louisiana	7,600	167	550	750	2,200	175	175	425	250	400	250
Maine	2,500	217	200	350	650	50	60	150	90	125	80
Maryland	8,600	197	700	1,100	2,400	200	175	450	225	400	250
Massachusetts	12,600	215	1,200	1,900	3,100	325	275	650	500	650	425
Michigan	16,400	181	1,400	2,100	4,400	325	400	900	475	800	600
Minnesota	7,300	177	650	1,000	1,700	150	125	500	250	425	325
Mississippi	4,600	180	300	500	1,400	90	100	350	125	275	200
Missouri	10,500	210	800	1,400	2,800	200	250	600	275	475	400
Montana	1,300	162	100	175	350	30	30	125	50	80	60
Nebraska	3,200	201	275	475	750	60	70	200	125	175	150
Nevada	1,300	136	80	150	400	25	20	50	10	60	30
New Hampshire	1,900	196	150	275	425	40	40	90	40	80	70
New Jersey	16,400	219	1,600	2,400	4,200	350	375	800	650	800	500
New Mexico	1,800	129	125	200	375	25	40	80	50	100	50
New York	37,500	212	4,000	5,800	9,000	850	950	1,900	1,600	2,100	1,400
North Carolina	10,400	170	750	1,100	2,700	225	275	600	250	475	375
North Dakota	1,200	179	90	175	225	20	20	90	60	80	50
Ohio	21,500	200	1,900	3,100	5,700	425	600	1,100	650	1,100	800
Oklahoma	6,000	183	400	750	1,700	100	100	350	150	300	225
Oregon	5,000	186	375	550	1,400	100	75	300	125	275	200
Pennsylvania	27,000	227	2,400	4,200	6,400	500	700	1,300	850	1,400	950
Rhode Island	2,400	248	250	400	550	60	40	125	100	100	60
South Carolina	4,900	150	375	500	1,400	100	125	300	125	275	175
South Dakota	1,300	193	100	200	300	20	30	100	50	100	80
Tennessee	8,600	184	600	900	2,500	200	200	450	225	450	300
Texas	22,400	140	1,700	2,400	6,300	425	500	1,200	700	1,200	1,000
Utah	1,500	91	150	175	225	20	30	100	50	75	60
Vermont	950	181	80	150	250	20	30	60	30	50	40
Virginia	8,900	158	750	1,100	2,600	175	225	475	250	425	300
Washington	7,300	165	600	900	2,100	150	150	425	200	400	275
West Virginia	3,900	199	275	475	1,100	75	100	200	100	200	125
Wisconsin	9,000	186	900	1,300	2,000	175	175	550	325	475	350
Wyoming	650	120	50	70	175	10	10	40	15	50	20
United States	440,000	187	37,000	58,000	117,000	9,000	10,000	24,000	14,000	23,000	16,000
Puerto Rico	3,000	84	125	125	300	175	150	225	400	100	150

Estimated New Cancer Cases and Deaths by Sex for All Sites – 1983*

SITE	ESTIMATED NEW CASES TOTAL	MALE	FEMALE	ESTIMATED DEATHS TOTAL	MALE	FEMALE
All Sites	855,000*	422,500*	432,500*	440,000	238,500	201,500
Buccal Cavity & Pharynx (Oral)	27,100	18,600	8,500	9,150	6,300	2,850
Lip	4,600	4,100	500	175	150	25
Tongue	4,900	3,200	1,700	2,000	1,400	600
Salivary Gland	}			700	450	250
Floor of Mouth	} 9,800	5,800	4,000	525	400	125
Other & Unspecified Mouth	}			1,550	1,000	550
Pharynx	7,800	5,500	2,300	4,200	2,900	1,300
Digestive Organs	202,400	103,700	98,700	115,200	60,250	54,950
Esophagus	9,000	6,400	2,600	8,500	6,200	2,300
Stomach	24,500	14,800	9,700	13,900	8,200	5,700
Small Intestine	2,100	1,100	1,000	700	350	350
Large Intestine } (Colon-	87,000	40,000	47,000	49,600	23,500	26,100
Rectum } Rectum)	39,000	21,000	18,000	8,500	4,600	3,900
Liver & Biliary Passages	13,300	6,300	7,000	10,000	4,900	5,100
Pancreas	25,000	12,900	12,100	22,600	11,800	10,800
Other & Unspecified Digestive	2,500	1,200	1,300	1,400	700	700
Respiratory System	149,100	105,200	43,900	122,100	87,000	35,100
Larynx	11,000	9,200	1,800	3,700	3,100	600
Lung	135,000	94,000	41,000	117,000	83,000	34,000
Other & Unspecified Respiratory	3,100	2,000	1,100	1,400	900	500
Bone, Tissue and Skin	24,100	12,200	11,900	10,500	6,000	4,500
Bone	1,900	1,100	800	1,750	1,000	750
Connective Tissue	4,800	2,600	2,200	1,650	800	850
Skin	17,400**	8,500**	8,900**	7,100+	4,200	2,900
Breast, Invasive	114,900***	900***	114,000***	37,500	300	37,200
Genital Organs	158,000	80,400	77,600	47,550	25,050	22,500
Cervix, Invasive } (Uterus)	16,000***	...	16,000***	7,000	...	7,000
Corpus, Endometrium } (Uterus)	39,000	...	39,000	3,000	...	3,000
Ovary	18,200	...	18,200	11,500	...	11,500
Prostate	75,000	75,000	...	24,100	24,100	...
Testis, Other Genital, Male	5,400	5,400	...	950	950	...
Other & Unspecified Genital, Female	4,400	...	4,400	1,000	...	1,000
Urinary Organs	56,700	39,400	17,300	19,200	12,500	6,700
Bladder	38,500	28,000	10,500	10,700	7,300	3,400
Kidney & Other Urinary	18,200	11,400	6,800	8,500	5,200	3,300
Eye	1,800	900	900	400	200	200
Brain & Central Nervous System	12,600	7,000	5,600	10,800	5,900	4,900
Endocrine Glands	11,200	3,500	7,700	1,500	600	900
Thyroid	10,200	2,900	7,300	1,050	350	700
Other Endocrine	1,000	600	400	450	250	200
Leukemia	23,900	13,200	10,700	16,100	9,000	7,100
Other Blood & Lymph Tissues	40,300	21,000	19,300	20,800	10,700	10,100
Hodgkin's Disease	7,100	4,100	3,000	1,600	900	700
Multiple Myeloma	9,600	4,900	4,700	6,900	3,500	3,400
Other Lymphomas	23,600	12,000	11,600	12,300	6,300	6,000
All Other & Unspecified Sites	32,900	16,500	16,400	29,200	14,700	14,500

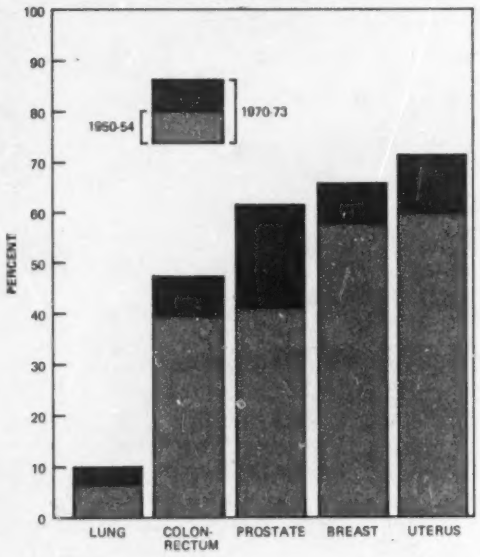
Note: The estimates of new cancer cases are offered as a rough guide and should not be regarded as definitive. Especially note that year-to-year changes may only represent improvements in the basic data. ACS six major sites in boldface.

*Carcinoma in situ and non-melanoma skin cancers not included in totals. Carcinoma in situ of the uterine cervix accounts for over 45,000 new cases annually and carcinoma in situ of the female breast accounts for over 5,000 new cases annually. Non-melanoma skin cancer accounts for about 400,000 new cases annually.

**Melanoma only. ***Invasive cancer only. +Melanoma 5,200; other Skin 1,900

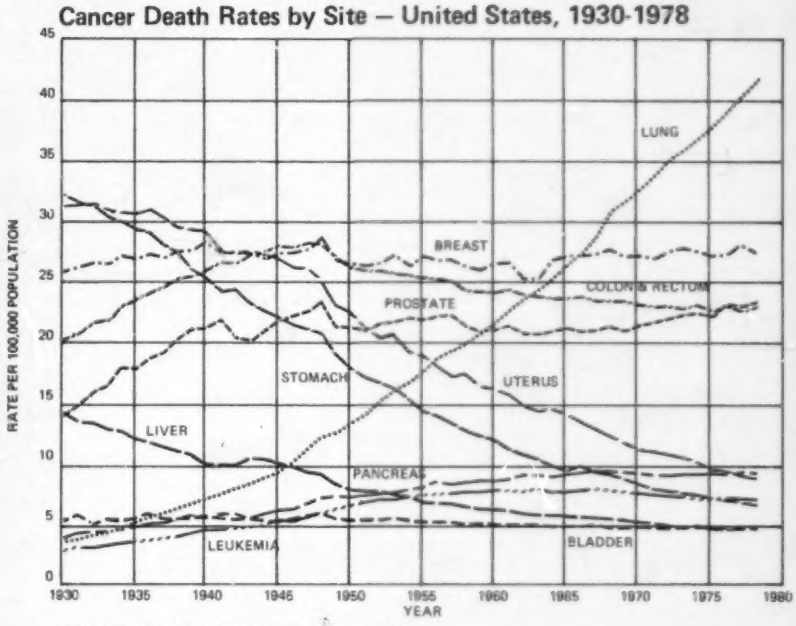
INCIDENCE ESTIMATES ARE BASED ON RATES FROM NCI SEER PROGRAM 1973-1979.

Five Year Cancer Survival Rates* Trends for Selected Sites — 1950-54 to 1970-73



*Adjusted for normal life expectancy.
Source: Biometry Branch, National Cancer Institute

Cancer Death Rates by Site — United States, 1930-1978



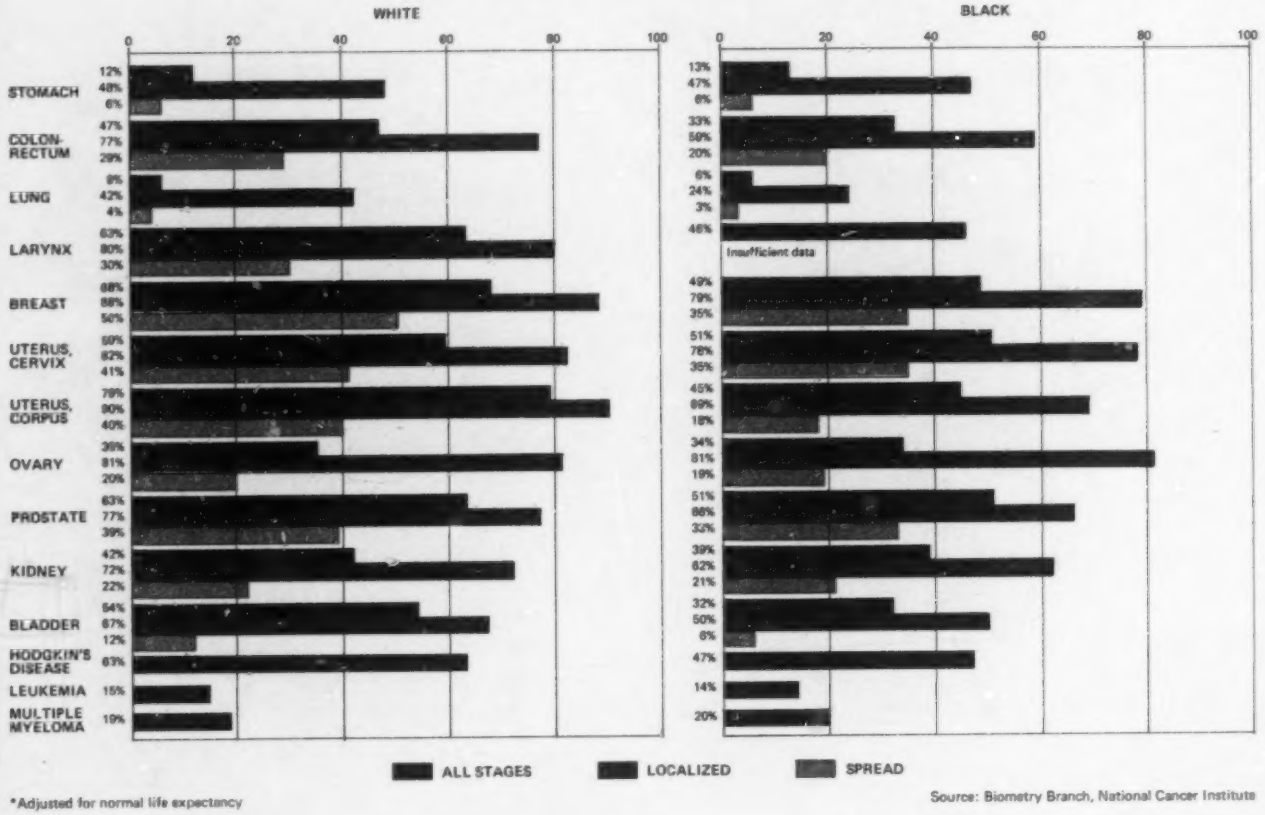
Rate for the population standardized for age on the 1970 U.S. population.
Sources of Data: National Center for Health Statistics and Bureau of the Census, United States.
Note: Rates are for both sexes combined except breast and uterus female population only and prostate male population only.

25-Year Trends in Age-Adjusted Cancer Death Rates Per 100,000 Population 1951-53 to 1976-78

Sex	Sites	1951-53	1976-78	Percent Changes	Comments
Male	All Sites	171.9	215.7	+ 25	Steady increase mainly due to lung cancer.
Female	All Sites	146.4	136.1	– 7	Slight decrease.
Male	Bladder	7.2	7.2	*	Slight fluctuations; overall no change.
Female	Bladder	3.1	2.1	– 32	Some fluctuations; noticeable decrease.
Male	Breast	0.3	0.3	*	Constant rate.
Female	Breast	26.0	27.1	+ 4	Slight fluctuations; overall no change.
Male	Colon & Rectum	25.8	26.4	*	Slight fluctuations; overall no change.
Female	Colon & Rectum	24.8	20.0	– 19	Slight fluctuations; noticeable decrease.
Male	Esophagus	4.7	5.4	+ 15	Some fluctuations; slight increase.
Female	Esophagus	1.2	1.5	*	Slight fluctuations; overall no change in females.
Male	Kidney	3.4	4.7	+ 38	Steady slight increase.
Female	Kidney	2.1	2.2	*	Slight fluctuations; overall no change.
Male	Leukemia	7.9	8.8	+ 11	Early increase, later leveling off.
Female	Leukemia	5.4	5.2	*	Slight early increase, later leveling off.
Male	Liver	6.7	4.8	– 28	Some fluctuations. Steady decrease in both
Female	Liver	7.6	3.6	– 53	sexes.
Male	Lung	25.5	69.3	+ 172	Steady increase in both sexes due to cigarette
Female	Lung	5.0	17.8	+ 256	smoking.
Male	Oral	5.9	5.8	*	Slight fluctuations; overall no change in both
Female	Oral	1.5	2.0	*	sexes.
Female	Ovary	8.1	8.6	+ 8	Steady increase, later leveling off.
Male	Pancreas	8.6	11.2	+ 30	Steady increase in both sexes, then leveling off.
Female	Pancreas	5.5	7.1	+ 29	Reasons unknown.
Male	Prostate	21.0	22.6	+ 8	Fluctuations all through period; overall no change.
Male	Skin	3.1	3.4	*	Slight fluctuations; overall no change in both
Female	Skin	1.9	1.9	*	sexes.
Male	Stomach	22.8	9.3	– 59	Steady decrease in both sexes; reasons unknown.
Female	Stomach	12.3	4.3	– 65	
Female	Uterus	20.0	8.7	– 57	Steady decrease.

*Percent changes not listed because they are not meaningful.

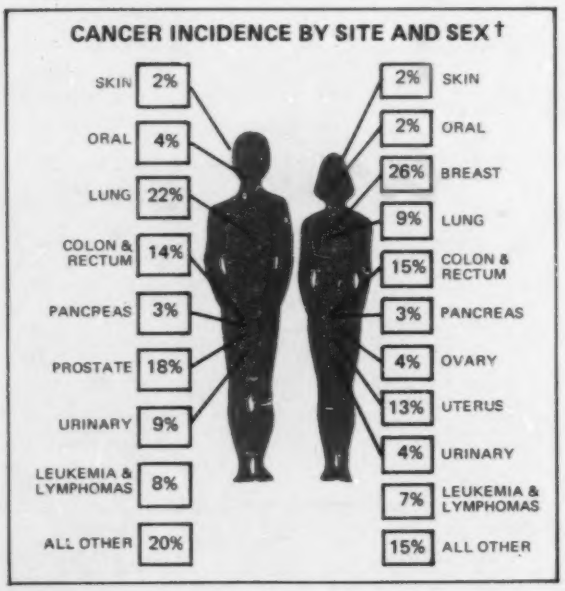
FIVE-YEAR CANCER SURVIVAL RATES* FOR SELECTED SITES BY RACE

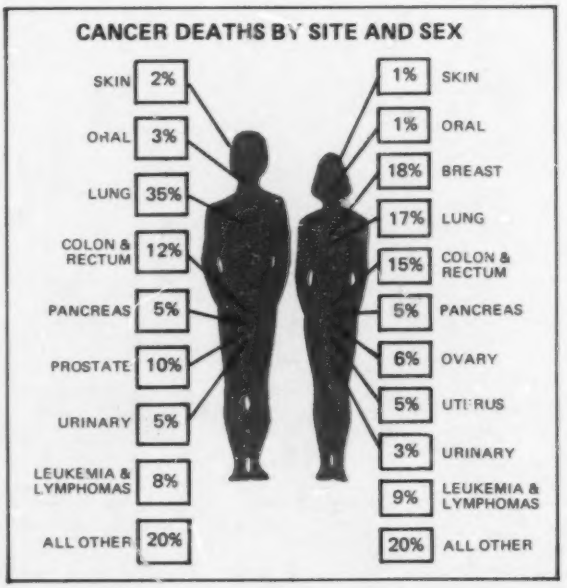


*Adjusted for normal life expectancy

Source: Biometry Branch, National Cancer Institute

1983 ESTIMATES





†Excluding non-melanoma skin cancer and carcinoma in situ.

CANCER AROUND THE WORLD, 1976-1977

Age-adjusted Death Rates Per 100,000 Population for Selected Sites for 42 Countries

Country	All Sites		Oral		Colon & Rectum		Lung		Breast	Uterus	Skin		Stomach		Prostate	Leukemia	
	Male	Female	Male	Female	Male	Female	Male	Female	Female	Female	Male	Female	Male	Female	Male	Male	Female
United States	213.6(17)	136.3(19)	5.8(8)	2.0(7)	26.2(16)	20.2(15)	68.1(6)	17.2(5)	27.3(14)	8.9(30)	3.4(6)	1.9(12)	9.2(37)	4.4(39)	22.3(12)	5.6(23)	5.2(5)
Argentina**	212.5(19)	137.2(18)	4.4(17)	1.0(30)	19.8(22)	17.3(21)	53.9(21)	7.3(22)	24.2(18)	14.0(12)	2.0(22)	1.1(30)	24.0(19)	12.2(22)	17.4(19)	6.7(19)	4.1(25)
Australia	210.5(22)	129.2(25)	5.3(11)	1.5(16)	28.1(12)	22.7(11)	61.6(18)	10.3(14)	24.8(16)	7.9(34)	6.6(1)	3.6(2)	15.7(34)	8.4(36)	22.9(11)	8.0(9)	5.0(11)
Austria	248.7(8)	155.3(7)	5.2(14)	0.9(32)	33.4(3)	22.5(13)	67.6(7)	8.7(15)	24.7(17)	16.3(8)	2.5(11)	1.9(12)	38.5(7)	20.6(7)	21.9(13)	7.1(16)	4.9(13)
Belgium*	266.7(3)	147.7(12)	3.5(27)	0.9(32)	29.0(9)	24.6(7)	91.5(4)	7.2(23)	27.7(13)	10.1(25)	1.7(26)	1.5(24)	23.4(20)	13.6(19)	25.1(4)	8.0(9)	4.8(17)
Bulgaria	158.8(35)	97.7(37)	2.4(37)	0.8(37)	13.5(29)	9.4(32)	44.1(24)	7.7(18)	14.6(29)	9.2(29)	1.4(29)	1.6(18)	36.6(9)	20.3(8)	8.9(33)	5.5(24)	4.1(25)
Canada	211.2(21)	135.3(20)	5.3(11)	1.6(14)	28.6(10)	23.0(9)	62.7(14)	12.5(11)	28.4(12)	8.3(33)	2.0(22)	1.8(15)	15.8(33)	7.2(37)	21.0(15)	8.8(2)	5.0(11)
Chile	197.7(23)	153.8(9)	3.3(30)	0.9(32)	9.9(32)	10.0(30)	25.3(32)	6.9(25)	14.1(30)	22.3(4)	1.7(26)	1.6(18)	64.9(2)	30.4(3)	17.0(21)	4.6(32)	3.7(30)
Costa Rica*	163.8(33)	139.5(16)	3.9(23)	1.7(11)	8.2(36)	8.4(34)	14.8(37)	6.1(28)	11.4(34)	24.4(3)	1.9(24)	0.8(32)	61.1(3)	38.8(1)	15.3(23)	4.4(33)	4.9(13)
Denmark	232.1(12)	170.9(2)	3.1(33)	1.5(16)	32.4(6)	25.9(4)	62.0(15)	15.2(8)	33.8(1)	15.2(11)	3.1(7)	2.7(4)	19.0(29)	9.7(31)	21.1(14)	8.9(1)	5.7(3)
England & Wales	251.5(7)	156.0(6)	3.7(24)	1.7(11)	29.6(8)	22.8(10)	96.5(3)	19.4(4)	33.6(2)	10.4(22)	2.2(18)	1.9(12)	25.1(17)	11.8(24)	18.2(18)	6.6(20)	4.4(20)
France*	255.7(6)	125.2(29)	18.5(3)	1.5(16)	28.0(13)	18.8(18)	48.6(23)	4.6(36)	22.7(21)	11.3(18)	2.2(18)	1.8(15)	20.4(27)	9.4(32)	23.1(9)	8.7(3)	5.2(5)
Germany, D.R.*	211.8(20)	133.8(22)	3.0(34)	0.9(32)	23.3(19)	19.6(16)	67.0(8)	6.0(29)	18.8(24)	15.9(9)	2.3(14)	1.5(24)	34.4(12)	16.4(15)	14.2(24)	7.3(14)	4.2(22)
Germany, F.R.	244.8(9)	154.8(8)	3.5(27)	0.9(32)	32.4(6)	24.8(6)	64.0(12)	6.8(26)	25.1(15)	12.1(15)	2.4(13)	1.6(18)	34.4(12)	18.3(10)	24.1(5)	8.2(7)	5.2(5)
Greece	185.8(28)	103.6(35)	2.2(39)	3.0(5)	8.8(35)	9.2(33)	55.3(20)	8.2(16)	15.1(28)	7.4(35)	1.4(29)	1.5(24)	17.6(31)	10.6(28)	9.7(31)	8.4(6)	5.2(5)
Honduras*	24.5(42)	37.8(40)	0.6(41)	0.4(41)	0.2(41)	0.7(41)	0.6(41)	0.4(42)	0.1(41)	2.7(41)	0.0(41)	0.1(39)	5.5(40)	3.7(40)	0.2(40)	2.1(40)	1.3(41)
Hong Kong	229.1(14)	125.3(28)	21.2(1)	7.1(1)	16.9(24)	11.9(27)	65.6(9)	30.4(1)	10.7(36)	12.1(15)	1.1(33)	0.6(36)	5.8(39)	9.2(33)	2.9(37)	3.8(35)	3.1(36)
Hungary	256.9(5)	163.6(4)	7.6(7)	1.4(20)	28.5(11)	22.6(12)	65.0(11)	11.2(12)	23.8(19)	19.6(5)	3.6(5)	2.9(3)	47.4(4)	22.6(4)	23.9(6)	7.6(13)	5.1(10)
Iceland	170.1(31)	138.7(17)	3.7(24)	1.8(10)	18.4(23)	16.0(24)	24.7(33)	14.8(9)	22.2(23)	6.5(38)	1.0(35)	0.0(41)	37.7(8)	21.5(6)	19.2(17)	5.0(27)	3.3(34)
Ireland*	225.2(15)	161.0(5)	5.3(11)	2.7(6)	36.0(1)	27.2(2)	61.8(16)	16.9(6)	32.0(6)	7.2(36)	2.1(20)	2.0(10)	25.1(17)	14.2(17)	23.0(10)	6.2(22)	3.6(31)
Israel	170.5(30)	141.3(14)	2.3(38)	1.5(16)	21.4(20)	16.6(23)	32.9(28)	10.5(13)	29.2(10)	5.8(39)	2.5(11)	1.6(18)	18.4(39)	9.2(33)	11.1(29)	8.7(3)	5.9(1)
Japan	186.7(27)	108.7(33)	2.2(39)	0.8(37)	15.0(26)	11.1(28)	28.3(31)	8.2(16)	5.7(39)	11.8(17)	1.0(35)	0.7(34)	70.2(1)	34.9(2)	3.6(35)	4.8(31)	3.3(34)
Malta & Gozo	185.1(29)	114.7(31)	9.5(4)	2.0(7)	15.3(25)	13.3(25)	50.3(22)	5.1(34)	33.4(3)	8.7(31)	1.8(25)	1.4(28)	30.1(14)	10.5(29)	11.2(28)	5.0(27)	4.8(17)
Maritius	100.5(37)	66.9(38)	3.7(24)	1.2(25)	9.9(32)	5.8(37)	15.9(36)	3.7(37)	7.9(37)	11.3(18)	0.5(38)	0.5(37)	22.0(24)	10.5(29)	4.4(34)	2.9(38)	2.4(40)
Netherlands	261.6(4)	142.6(13)	2.5(36)	0.8(37)	26.9(14)	21.1(14)	97.7(2)	6.2(27)	31.5(7)	9.3(28)	2.3(14)	1.6(18)	28.2(15)	13.0(21)	23.8(7)	8.0(9)	5.2(5)
New Zealahd	221.0(16)	150.7(10)	4.3(20)	1.7(11)	33.0(4)	30.0(1)	65.6(9)	13.5(10)	30.0(9)	10.2(24)	6.4(2)	3.8(1)	19.1(28)	8.5(35)	23.8(7)	8.5(5)	4.9(13)
Nicaragua*	30.6(41)	30.9(41)	0.0(42)	0.0(42)	0.0(42)	0.0(42)	0.4(42)	0.5(41)	0.0(42)	1.4(42)	0.0(41)	0.0(41)	2.8(41)	0.6(42)	0.0(42)	3.2(37)	3.0(38)
Northern Ireland	229.6(13)	150.4(11)	3.3(30)	1.6(14)	33.5(2)	25.5(5)	71.7(5)	16.0(7)	33.0(5)	8.4(32)	2.1(20)	2.1(7)	23.4(10)	14.3(16)	19.9(16)	7.3(14)	3.5(32)
Norway	188.0(26)	131.2(23)	4.3(20)	1.1(27)	23.4(18)	19.4(17)	30.5(30)	5.9(31)	22.6(22)	9.9(26)	4.6(3)	2.6(5)	23.8(27)	11.8(24)	29.8(2)	6.6(20)	4.9(13)
Paraguay*	104.1(36)	120.2(30)	4.0(22)	1.1(27)	8.1(37)	5.0(38)	9.6(38)	2.7(39)	17.0(25)	36.3(1)	1.5(28)	0.5(37)	23.9(22)	12.1(23)	12.9(26)	5.2(26)	4.4(20)
Philippines*	62.2(39)	55.1(39)	5.7(10)	4.5(3)	12.8(30)	3.6(39)	8.7(39)	3.6(38)	6.7(38)	7.1(37)	1.1(33)	0.7(34)	7.0(38)	5.5(38)	1.9(38)	3.5(36)	2.8(39)
Poland	213.4(18)	126.4(27)	5.8(8)	1.3(22)	14.5(28)	11.1(28)	60.2(19)	7.5(20)	16.3(26)	15.7(10)	0.5(38)	2.1(7)	44.6(5)	17.5(12)	10.2(30)	6.8(18)	4.2(22)
Romania	161.3(34)	105.7(34)	4.4(17)	1.1(27)	9.6(34)	8.0(35)	37.7(26)	7.2(23)	13.3(32)	18.9(6)	2.3(14)	1.6(18)	36.5(10)	16.7(14)	12.5(27)	4.9(29)	3.5(32)
Scotland	269.8(2)	165.8(3)	4.4(17)	1.9(9)	32.7(5)	26.5(3)	108.5(1)	23.1(2)	31.3(8)	10.5(21)	2.8(9)	2.0(10)	25.4(16)	13.4(20)	17.2(20)	6.9(17)	4.2(22)
Singapore	242.1(10)	127.7(26)	18.9(2)	6.3(2)	21.2(21)	16.7(22)	64.0(12)	20.3(3)	11.4(34)	12.7(14)	0.5(38)	0.8(32)	42.2(6)	18.2(11)	3.0(36)	4.9(29)	3.1(36)
Spain*	192.5(25)	109.9(32)	4.8(15)	0.8(37)	7.4(38)	12.8(26)	13.7(35)	4.8(36)	15.8(27)	10.3(23)	1.0(35)	1.3(29)	15.9(32)	16.8(13)	9.7(31)	2.8(39)	4.1(25)
Sweden	197.5(24)	140.9(15)	3.4(29)	1.4(20)	25.0(17)	18.6(19)	33.4(27)	7.7(18)	23.5(20)	9.6(27)	3.1(7)	1.7(17)	20.9(25)	10.8(27)	32.3(1)	7.9(12)	5.6(4)
Switzerland	236.8(11)	134.2(21)	8.0(6)	1.3(22)	26.6(15)	17.6(20)	61.7(17)	5.9(31)	28.6(11)	11.2(20)	3.8(4)	2.4(6)	12.0(36)	11.6(25)	28.5(3)	8.1(8)	4.7(19)
Thailand	37.1(40)	24.8(42)	2.6(35)	1.3(22)	3.8(40)	1.2(40)	4.9(40)	1.9(40)	0.9(40)	3.3(40)	1.3(32)	0.1(39)	1.8(42)	0.8(41)	0.2(40)	0.6(41)	0.4(42)
Uruguay*	294.6(1)	180.3(1)	8.3(5)	1.2(25)	14.6(27)	24.5(8)	32.5(29)	6.0(29)	33.3(4)	17.3(7)	1.4(29)	0.9(31)	20.8(26)	18.4(9)	1.6(39)	0.4(42)	5.8(2)
Venezuela	65.4(38)	130.3(24)	3.3(30)	3.1(4)	7.1(39)	8.0(35)	21.3(34)	5.2(33)	12.1(33)	27.5(2)	2.7(10)	2.1(7)	35.0(11)	22.5(5)	16.3(22)	4.0(34)	3.6(31)
Yugoslavia	166.5(32)	101.9(36)	4.5(16)	1.0(30)	12.3(31)	10.0(30)	43.3(25)	7.4(21)	13.9(31)	12.8(13)	2.3(14)	1.5(24)	15.3(35)	14.0(18)	13.5(25)	5.5(24)	3.8(29)

NOTE: Figures in parentheses are order of rank within site and sex group. *1976 only. **1977 only.

Source of Data: World Health Statistics Annual 1979- 1980

LUNG CANCER

Incidence: An estimated 135,000 new cases in 1983.

Mortality: An estimated 117,000 deaths in 1983. The age-standardized lung cancer death rate for women is now approaching that of colorectal cancer, and within the next few years may surpass breast cancer to become the number one cancer killer of women. Those who smoke two or more packs of cigarettes a day have lung cancer mortality rates 15 to 25 times greater than nonsmokers, according to the 1982 Surgeon General's Report.

Warning Signals: A persistent cough; sputum streaked with blood; chest pain; recurring attacks of pneumonia or bronchitis.

Risk Factors: Heavy cigarette smoking; history of smoking 20 or more years; exposure to certain industrial substances such as asbestos, particularly for those who smoke.

Early Detection: Lung cancer is very difficult to detect early. If a smoker quits at the time of early cellular changes, the damaged bronchial lining often returns to normal. Continued smoking in many cases causes the cells to form abnormal growth patterns that lead to cancer. Diagnosis may be aided by such procedures as the chest X ray, sputum cytology test and fiberoptic bronchoscopy.

Treatment: Surgery, radiation therapy and chemotherapy. Surgery is usually the treatment of choice, and with improved ventilation machinery and better antibiotics, surgical complications are infrequent. Since a third of all surgical lung cancer patients experience tumor spread, radiation therapy and chemotherapy are frequently used as well as surgery.

Survival: Only 9% of lung cancer patients (all stages, white and blacks) live five or more years after diagnosis. The rate is 39% for cases detected in a localized stage; 20% of lung cancers are discovered that early. Rates have improved only slightly over a recent 10-year period. Since lung cancer in women grows more slowly than that in men, women with the disease generally live longer than men.

SMOKING

The American Cancer Society estimates that cigarette smoking is responsible for 83% of lung cancer cases among men and 43% among women—more than 75% overall.

The cancer death rate for male smokers is double that of nonsmokers, and the rate for female smokers is 30% higher than for nonsmokers.

The higher cancer rates for men reflect the fact that in the past, more men than women smoked, and smoked more heavily. In recent years, however, the gap between male and female smoking has been narrowing.

Smoking also has been implicated in cancers of the mouth, pharynx, larnyx, esophagus, pancreas and bladder. Smoking accounts for about 25% of all cancers, is a major cause of heart disease, and is linked to conditions ranging from colds and gastric ulcers to chronic bronchitis and emphysema.

Smoking-related disorders are estimated to cause some 325,000 premature deaths each year, and cost the nation about $27 billion in medical care.

A DECLINE IN SMOKING

In recent years, the proportion of adult smokers in the U.S. population has been steadily declining. From 1976 to 1980, adult male smokers (17 years and older) dropped from 41.9% of the population to 36.7%, while women smokers decreased from 32% to 28.9%, according to the U.S. Office on Smoking and Health. Overall, by 1980, the percentage of men and women smokers in the population had dropped to 32.6%.

Per capita cigarette consumption among adults has fallen—from 4,037 in 1971 to 3,840 in 1981—reflecting a growing number of ex-smokers. From 1965 to 1980, the proportion of adult male ex-smokers (20 years and older) in the total U.S. population increased from 20.5% to 29.2%, while female ex-smokers rose from 8.2% to 15.5%.

Among teenagers, smokers aged 12 to 18 years declined 25% between 1974 and 1979, according to a government study. A more recent survey supported by the National Institute on Drug Abuse indicated that the percentage of high school seniors (aged 17 and 18) who smoked at least half a pack of cigarettes decreased by about a third, from 19.4% in 1979 to 13.5% in 1981.

All this translates out to more than 33 million ex-smokers now living in the United States.

At the same time, however, the average smoker appears to be smoking more heavily. The U.S. Office on Smoking and Health reports that the proportion of adult male smokers (20 years and older) consuming 25 or more cigarettes per day increased from 31% to 34% between 1976 and 1980, and female smokers from 19.6% to 23.7%.

Figures from the U.S. Department of Agriculture show that a total of 640 billion cigarettes were consumed in 1981.

WAYS OF QUITTING

Ninety-five percent of the smokers who have successfully given up cigarettes have done so on their own—without the aid of any organized program. However, for those smokers who would like help in quitting, a new emphasis has been placed on the use of proven self-help materials.

Long-term success of smoking cessation clinics shows a quit rate of about 25-35%. These are for smokers needing more intensive assistance and group support. Moreover, new maintenance techniques promise improved rates, and there are several reports among ACS clinics and other programs citing 50% abstinence six months or longer after the initial quitting.

LOWER TAR & NICOTINE

Research has shown that there is no such thing as a "safe" cigarette, but that those who are not yet able to quit would be well advised to switch to relatively low tar and nicotine (T/N) brands. Moreover, according to ACS data, low T/N smokers find it easier to quit than high T/N smokers.

From 1960 to 1972, the average mortality of low T/N smokers was 16% lower than that of high T/N smokers, and the comparable figure for lung cancer mortality was 26%.

Besides tar and nicotine, cigarette smoke contains poisonous gases—hydrogen cyanide, volatile aromatic hydrocarbons, and especially carbon monoxide—which is a possible critical factor in coronary heart disease and fetal growth retardation, among other things. Despite some reduced hazards because of the growing number of filtered cigarettes, certain filtered brands have been found to deliver more carbon monoxide than those without filters.

PASSIVE SMOKING HAZARDS

There may even be hazards for nonsmokers who breathe the smoke of others' cigarettes. Two scientific studies recently indicated an increased risk of lung cancer among the nonsmoking wives of cigarette smokers. Another study, however, found little if any risk for these "passive smokers."

The question has not been resolved, and there is cause for concern. Therefore, the American Cancer Society believes that further research is urgently needed. The Society's new Cancer Prevention Study II, involving more than one million Americans, will include a careful assessment of cancer risk and other diseases among both smokers and passive smokers.

INDUSTRIAL HAZARDS

Industrial workers are especially susceptible to lung diseases due to the combined effects of cigarette smoking and exposure to toxic industrial substances such as fumes from rubber and fluorocarbon polymers, chlorine and dust from cotton and coal. Exposure to asbestos in combination with cigarette smoking increases an individual's cancer risk nearly 60 times.

In his 1982 report, *The Health Consequences of Smoking*, U.S. Surgeon General C. Everett Koop confirmed many of the ACS findings, declaring that cigarette smoking is "the chief, single, avoidable cause of death in our society, and the most important health issue of our time."

BREAST CANCER

Incidence: An estimated 114,000 new cases in the United States during 1983. About one out of 11 women will develop breast cancer at some time during their lives.

Mortality: An estimated 37,000 deaths in 1983. It is the foremost site of cancer deaths in women.

Warning Signals: Breast changes that persist such as a lump, thickening, swelling, dimpling, skin irritation, distortion, retraction or scaliness of the nipple, nipple discharge, pain or tenderness.

Risk Factors: Over age 50; personal or family history of breast cancer; never had children; first child after age 30.

Early Detection: The American Cancer Society recommends the monthly practice of breast self-examination (BSE) by women 20 years and older as a routine good health habit. Most breast lumps are not cancer, but only a physician can make a diagnosis.

The American Cancer Society and the National Cancer Institute, in their joint Breast Cancer Detection

Demonstration program, found that mammography—a low-dose x-ray examination—could find most cancers too small to be felt by the most experienced examiner.

Besides its effectiveness in screening women without symptoms, mammography is recognized above all as a most valuable diagnostic technique for women who do have symptoms that might suggest breast cancer. Once a suspicious breast lump is found, mammography can help determine if there are other lesions in the same or opposite breast which are too small to be palpable.

The Society recommends a mammogram every year for asymptomatic women over age 50 when feasible, and a baseline mammogram for those between 35 and 40. Women 40 to 50 should consult their physicians on whether and how frequently they need mammography.

Techniques such as thermography (heat patterns), ultrasound (high-frequency sound waves) and diaphonoscopy (inspection with a beam of light) are currently being studied for their possible effectiveness in detecting early breast cancer. At present, however, these techniques have not been proven to be as effective as mammography.

A professional breast examination is recommended every three years for women 20 to 40, and every year for those over 40.

Treatment: Several therapies may be used, depending on the individual woman's medical situation—surgery varying from local removal to mastectomy, radiation therapy, chemotherapy or hormone manipulation. Often two or more therapies may be used in combination. Patients should discuss with their physicians possible options available concerning the specific management of their breast cancer.

New techniques in recent years have made breast reconstruction possible after mastectomy with good cosmetic results. Reconstruction now has become an important part of treatment and rehabilitation.

Survival: The five-year survival rate for early, localized breast cancer has risen from 78% in the 1940's to 87% today. If the cancer has spread, however, the rate is only 47%. Five-year survival for localized breast cancer is 88% for whites and 79% for blacks.

Despite an increasing incidence of breast cancer, longer survival has helped to stabilize mortality rates over the last 50 years.

UTERINE CANCER

Incidence: An estimated 55,000 new invasive cases in 1983, including 16,000 cases of cancer of the cervix, and 39,000 cases of cancer of the endometrium or body of the uterus. Cervical cancer incidence has steadily decreased over the years. It is most common today among low socioeconomic groups. Endometrial cancer afflicts mostly mature women, and diagnosis usually is made between the ages of 50 and 64.

Mortality: An estimated 7,000 deaths in 1983 from cervical cancer, 3,000 from endometrial cancer. Overall, the death rate from uterine cancer has decreased more than 70% during the last 40 years, due mainly to the Pap test and regular checkups.

Warning Signals: Unusual bleeding or discharge.

Risk Factors: For cervical cancer, early age at first intercourse, multiple sex partners. For endometrial cancer: history of infertility; failure of ovulation; prolonged estrogen therapy; late menopause; combination of diabetes, high blood pressure and obesity.

Early Detection: The Pap test, an examination under a microscope of cells from the cervix and body of the uterus, is a simple procedure which can be performed at appropriate intervals by physicians as part of every pelvic examination. A Pap test is recommended once every three years after two initial negative tests one year apart.

The Pap test is highly effective in detecting early cancer of the uterine cervix; it is only 50% effective in detecting endometrial cancer. Women at high risk of developing endometrial cancer should have an endometrial tissue sample at menopause.

Estrogen, which is a hormone, is given to women during and after menopause to make up for the decline in estrogens normally produced by the ovaries. Estrogen helps to control menopausal symptoms such as hot flashes or thinning of the vaginal lining causing painful sexual intercourse.

For older women, there are certain risks associated with such treatment, including an increased risk of endometrial cancer. However, estrogen can be given safely under careful physician control.

Treatment: Uterine cancer generally is treated by surgery or radiation, or by a combination of the two. In precancerous stages, changes in the cervix may be treated by cryotherapy, the destruction of cells by extreme cold, or by electrocoagulation, the destruction of tissue through intense heat by electric current. Precancerous endometrial changes may be treated with the hormone, progesterone.

Survival: The 5-year survival rate for cervical cancer patients, whites and blacks, is 57%. For patients diagnosed early, however, the rate is 81%. The same figures for endometrial cancer are 75% all stages, 88% early. During a recent 10-year period, there was moderate improvement for both uterine sites.

COLON AND RECTUM CANCER

Incidence: An estimated 126,000 new cases in 1983, including 87,000 of colon cancer and 39,000 of rectum cancer. Their combined incidence is second only to that of lung cancer (excluding common skin cancers).

Mortality: An estimated 58,000 deaths in 1983, second only to lung cancer.

Warning Signals: Bleeding from the rectum, blood in the stool, change in bowel habits.

Risk Factors: Personal or family history of colon and rectum cancer; personal or family history of polyps in the colon or rectum; ulcerative colitis.

There is evidence that bowel cancer may be linked to environmental factors, such as dietary patterns. Some scientists believe that a diet high in beef and/or deficient in fiber content may be a significant causative factor.

Early Detection: The ACS recommends three tests as valuable aids in detecting colon and rectum cancer early.

The digital rectal examination is performed by a physician during an office visit. The ACS recommends one every year after age 40.

The stool guaiac slide test, done by the patient at home, is a simple method of testing the feces for hidden blood. The ACS recommends the test every year after 50.

Proctosigmoidoscopy, known as the "procto," is an examination in which a physician inspects the rectum and lower colon with a hollow lighted tube, traditionally 25 cm long. As the site of most colorectal cancer appears to be shifting higher in the colon, longer, flexible instruments are being developed. Currently under clinical testing is a 35 cm sigmoidoscope, thought to be more suited to routine use in doctors' offices. It is expected to be able to detect more than 60% of all colorectal cancers. The ACS recommends a procto every 3 to 5 years after the age of 50, following two annual exams with negative results.

If any of these tests reveals possible problems, a physician may recommend more extensive studies, such as colonoscopy. The longest available colonoscope is capable of viewing the entire colon with a flexible, lighted tube. The colonoscope also can biopsy suspicious tissue.

Treatment: Surgery is the most effective method of treating colorectal cancer, but radiation and chemotherapy are being used in combination with surgery in some cases.

A colostomy—the creation of an abdominal opening for the elimination of body wastes—can be either temporary or permanent. In cases of colon cancer, permanent colostomies are rare, however, and are performed on only about 15% of patients with rectal cancer. For those who do have permanent colostomies, the Society has a special program to help patients adjust.

Survival: When colorectal cancer is detected and treated in an early, localized stage, the five-year survival rate is 76% for colon cancer and 73% for rectal cancer, compared with 28% and 23% respectively, after the cancer has spread to other parts of the body.

SKIN CANCER

Incidence: An estimated 400,000 cases a year, the vast majority of which are highly curable basal or squamous cell cancers. They are more common among individuals with lightly pigmented skin, living at latitudes near the equator. The most serious skin cancer is malignant melanoma, which strikes about 17,000 men and women each year.

Mortality: An estimated 7,100 deaths a year, 5,200 from malignant melanoma, and 1,900 due to other skin cancers.

Warning Signals: Any unusual skin condition, especially a change in the size or color of a mole or other darkly pigmented growth or spot.

Risk Factors: Excessive exposure to the sun; fair complexion; occupational exposure to coal tar, pitch, creosote, arsenic compounds and radium. In the black population, because of heavy skin pigmentation, skin cancer is negligible.

Avoid the sun between 10:00 a.m. and 3 p.m. when ultraviolet rays are strongest, and by using protective clothing. Use one of the growing number of sunscreen preparations, especially those containing such ingredients as PABA (para-aminobenzoic acid). They come in varying strengths, ranging from those that permit gradual tanning to those allowing practically no tanning at all.

Basal and squamous cell skin cancers often take the form of a pale, waxlike, pearly nodule, or a red, scaly, sharply outlined patch.

Melanomas are usually distinguished by a dark brown or black pigmentation. They start as small, mole-like growths that increase in size, change color, become ulcerated and bleed easily from a slight injury.

Treatment: There are four methods of treatment: surgery, radiation therapy, electrodesiccation (tissue destruction by heat), or cryosurgery (tissue destruction by freezing).

For malignant melanoma, wide and deep surgical

excision and removal of nearby lymph nodes are often required.

Survival: For basal cell and squamous cell cancers, cure is virtually assured with early detection and treatment.

Malignant melanoma, however, metastasizes quickly. This fact accounts for the lower 5-year survival rate for white patients with this disease—68% compared with 95% for patients with other kinds of skin cancer.

ORAL CANCER

Incidence: An estimated 27,000 new cases in 1983. Incidence is more than twice as high in males as in females, and is most frequent in men over age 40. Cancer can affect any part of the oral cavity, from lip to tongue to mouth and throat.

Mortality: An estimated 9,150 deaths in 1983.

Warning Signals: A sore that bleeds easily and doesn't heal; a lump or thickening; a reddish or whitish patch that persists; difficulty in chewing, swallowing or moving tongue or jaws.

Risk Factors: Heavy smoking and drinking, use of chewing tobacco.

Early Detection: Dentists have the opportunity, through regular checkups, to see abnormal tissue changes and to detect cancer at an early and curable stage.

Treatment: Principal methods are surgery and radiation therapy.

Survival: Five-year survival rates vary substantially depending on the site, and include slight declines as well as improvements over a recent 10-year period. Rates range from 22% for cancer of the pharynx to 84% for lip cancer. Overall, 5-year survival for oral cancer patients is about 40%.

LEUKEMIA

Incidence: An estimated 24,000 new cases in 1983, about half of them acute leukemia, and half of them chronic leukemia. Although it is often thought of as primarily a childhood disease, leukemia strikes many more adults (21,500 cases per year compared with 2,500 in children). Acute lymphocytic leukemia accounts for about 1,800 of the cases of leukemia among children, whereas in adults the most common types are acute granulocytic (about 6,800 cases annually), and chronic lymphocytic (7,600 cases annually).

Mortality: An estimated 16,000 deaths in 1983.

Warning Signals: Acute leukemia in children appears suddenly, with symptoms similar to those of a cold, and progresses rapidly. Lymph nodes, spleen and liver become enlarged with white blood cells that accumulate in those organs. Early signs may include fatigue, paleness, weight loss, repeated infections, easy bruising, nose bleeds or other hemorrhages. Symptoms of advanced leukemia include extreme fatigue, massive hemorrhages, pain, swelling of gums and various skin disorders. Chronic leukemia progresses slowly and without warning signs. Symptoms, similar to those of acute leukemia, may not appear for years.

Risk Factors: Leukemia, a cancer of the blood-forming tissues, strikes both sexes and all ages. Causes of most cases are unknown. There is some evidence of inherited susceptibility, although not for direct transmission from parent to child. Individuals with Down's syndrome (mongolism) and certain other hereditary abnormalities have higher than normal incidence of leukemia. It has also been linked to excessive exposure to radiation and certain chemicals such as benzene.

Early Detection: Leukemia may be difficult to detect early because symptoms often appear to be those of other less serious conditions. When a physician does suspect leukemia, a diagnosis can be made through blood tests and a biopsy of bone marrow.

Treatment: Chemotherapy is by far the most effective method of treating leukemia patients. Today, continuing research in 80 U.S. medical centers is yielding new and better drugs for treating leukemia patients. A variety of anti-cancer drugs are used singly or in combinations. All blood-forming tissues release millions of each type of cells daily into one of the body's two circulatory systems—the blood vessel system and the lymph system. When leukemia strikes, millions of abnormal, immature white blood cells called leukocytes are released into these circulatory systems.

Because these cells are immature, they cannot carry out their basic function of fighting infection. In advanced leukemia, the uncontrolled multiplication of abnormal cells results in crowding out the production of normal white cells to fight infection, of platelets to control hemorrhaging and of red blood cells to prevent anemia. Blood transfusions and antibiotics are used as supportive treatment.

Survival: The overall, average 5-year survival rate for white patients with leukemia (black information is insufficient) is 15%, due partly to very poor survival

of patients with some types of leukemia such as acute granulocytic. Over a recent 10-year period, however, there was a dramatic improvement in survival of patients with acute lymphocytic leukemia: 4%-27% in white males, 3%-29% in white females, and 4%-34% in white children. Moreover, in some medical centers, optimum treatment has raised survival of children with acute lymphocytic leukemia to between 50% and 75%.

CANCER IN CHILDREN

Incidence: An estimated 6,000 new cases in 1983. Cancers in children tend to develop more quickly than adult cancers because body tissues are growing rapidly and the cancer grows right along with them. Common childhood cancer sites include the blood, bone, brain, nervous system and kidneys.

Mortality: An estimated 1,600 deaths in 1983, about half of them from leukemia. Cancer is the chief cause of death by disease in children between the ages of 3 and 14. Mortality among children with cancer has declined from 8.3 per 100,000 in 1950 to 4.4 in 1978.

Early Detection-General: Cancers in children often are difficult to recognize since they may seem like trivial disorders at first. Parents should see that their children have regular medical checkups, and be alert to any unusual symptoms that persist. Such conditions include nausea, swelling, double vision, stumbling, nosebleeds, drowsiness and listlessness.

Main Childhood Cancers:

Leukemia (See preceding section.)

Osteogenic Sarcoma is a bone cancer which develops most often in the forearm or lower leg. There is usually no pain at first, but eventually swelling and difficulty in using the arm or leg occur.

Cancers of the Nervous System, known as neuroblastomas, can appear anywhere but usually in the abdomen, where a swelling occurs.

Brain Cancers in early stages may cause blurred or double vision, dizziness, difficulty in walking or handling objects, and nausea.

Lymphomas are cancers that attack the lymph nodes, bone marrow and various organs throughout the body. They may cause swelling of lymph nodes in the neck, armpit, or groin. Other symptoms may include general weakness and possibly fever.

Eye Cancers usually occur in children under the age of four. When detected early, cure is possible with appropriate treatment.

Cancer of the Kidney, or Wilms' Tumor, may be recognized by a swelling or lump in the abdomen.

Treatment: Childhood cancers are frequently treated by a combination of therapies, coordinated by a team of experts. They include medical specialists, pediatric nurses, social workers and psychologists who work with the child and the family.

Survival: Five-year survival rates for cancer in children vary considerably, depending on the site. Among those for white children (black information is insufficient) are: bone cancer, 30%, neuroblastoma, 40%; glioma (brain), 59%; Wilms' tumor (kidney), 70%; retinoblastoma (eye), 85%; and Hodgkin's disease, 90%.

PUBLIC EDUCATION

Because each year thousands of lives could be saved through cancer prevention and early detection, the Society's Public Education programs are designed to inform people about cancer, tell them what they can do to protect themselves, and demonstrate related health practices.

The Society believes strongly in the value of periodic cancer-related checkups and specific cancer tests, as well as prompt action in the event that one of cancer's seven warning signals occurs.

Six cancer sites offer the greatest opportunity for prevention or cure: lung, colorectal, breast, uterine, oral and skin. Cancers at these sites account for the majority of cancer cases and about half of all cancer deaths.

P-A-C-E STRATEGY

The Society's P-A-C-E (Priority Activities in Cancer Education) planning strategy focuses on the first four of these six sites—where prevention or early detection provides the biggest payoff in lives saved.

ACS Public Education programs are divided into two major audience categories: adults and youth. Adults are reached through the work place, clubs and organizations, home and neighborhood, and programs with other health agencies. Youth programs are organized according to school grade: kindergarten through 6th, 7th through 9th, and 10th through 12th. These programs teach young people health habits, help them make lifestyle decisions and understand health behavior as it relates to cancer.

Programs for adults are carried out in small group settings or on a one-to-one basis, involving two-way communication and interaction. Whenever possible, volunteers are selected on the basis of professional skills that can be readily adapted to Society work, such as ex-smokers with group experience who can lead quit-smoking clinics, and nurses who can teach breast self-examination to groups of women. The Society reinforces its Public Education messages with a variety of films, filmstrips, pamphlets and posters.

CANCER-RELATED CHECKUP GUIDELINES

Guidelines for the early detection of cancer in people without symptoms are recommended by the American Cancer Society as follows:

A cancer-related checkup:

- every 3 years for those 20-40 years of age.
- every year for those 40 and over.

The Society advises: "Talk with your doctor—ask how the guidelines relate to you." The checkup should always include health counseling (such as tips on quitting smoking) and examinations for cancer of the thyroid, testes, prostate, mouth, ovaries, skin and lymph nodes.

In particular:

- Ages 20-40—For breast cancer, an examination by a physician every 3 years, a self-exam every month, and one baseline breast X ray between ages 35 and 40; for uterine cancer, a pelvic exam every 3 years and a Pap test at least every 3 years after 2 initial negative tests one year apart (including women under 20 if sexually active).
- Ages 40 and over—For breast cancer, a professional exam every year, a self-exam every month and a breast X ray every year after age 50 (between ages 40 and 50, ask your doctor;) for uterine cancer, a pelvic exam every year, a Pap test at least every 3 years, and an endometrial tissue sample at menopause, if at risk; for colon and rectum cancer, a digital rectal exam every year after 40, a stool occult blood test every year after 50 as well as a procto exam every 3 to 5 years after 2 initial negative tests one year apart.

Some people are at higher risk for certain cancers and may need to have tests more frequently. See individual cancer site sections for high risk factors.

REACHING MORE PEOPLE

Last year, local ACS Public Education programs involving two-way communication reached 11 million adults and over 24 million young people: some three million more than the previous year.

For the rest of the decade, the Society has set specific behavioral goals of persuading more Americans to have tests for colorectal cancer, reducing the number of smokers, and increasing the number of women who practice monthly breast self-examination, get Pap tests and have endometrial tissue samples taken.

In addition to the Society's intensive, person-to-person educational outreach, broader ACS programs blanket the nation with lifesaving messages. During the annual Cancer Crusade, volunteers make personal home visits, urging individuals to protect themselves against cancer.

More than 60 million educational leaflets are distributed each year, and important cancer educational messages reach nearly every U.S. household through television, radio and the print media.

PROFESSIONAL EDUCATION

ACS Professional Education programs bring the latest developments in cancer to the medical community; members and students of the medical, dental, nursing and allied health professions.

National conferences, clinical fellowships, Division- and Unit-level meetings, workshops, scholarships and educational materials provide information and training in the prevention and early detection of cancer, and in the treatment and rehabilitation of cancer patients.

AUDIOVISUAL, JOURNALS

Films, slide sets, audio tapes, speakers, publications and exhibits are available to other organizations for Professional Education programs. The ACS publishes *Ca-A Cancer Journal for Clinicians*, which is directed particularly to the primary care physician and has a total circulation of more than 450,000. The Society supports the publication of the journal *Cancer*, directed to those specializing in the care of the cancer patient.

The Society maintains a library of Professional Education motion pictures, available in 16mm and

8mm cartridge formats, as well as in ¾-inch videocassettes. All are distributed through ACS Divisions and Units on a free loan or five-year lease basis.

An ACS national conference on The Primary Care Physician and Cancer was held in Washington, DC June 24-26, 1982.

NURSING PROGRAMS

Cancer Nursing News, a newsletter sent to about 50,000 nurses, began publication in September, 1982. The bimonthly newsletter keeps nurses up-to-date on cancer, oncology nursing, the American Cancer Society, and opportunities in continuing education.

The Society initiated in 1981 a program of two-year nursing scholarships. Ten of them were awarded to qualified graduate students studying for a master's degree with a specialty in cancer nursing. Ten additional scholarships are expected to be awarded each year hereafter.

Another new nursing program launched in 1981 is entitled, "Clinical Professorships in Oncology Nursing." It provides a means for ACS Divisions to support selected individuals who will develop high quality cancer teaching programs in the nursing field.

CLINICAL FELLOWSHIPS & PROFESSORSHIPS

The ACS National Clinical Fellowship program since 1948 has spent more than $34 million to train some 6,500 physicians and dentists in the diagnosis and treatment of cancer. Training is provided on two levels at approved teaching centers and hospitals.

The regular Clinical Fellowship program—for hospital residents—is designed to improve the management of the patient with cancer by supporting clinical oncology training for young physicians and dentists.

The Junior Faculty Clinical Fellowship program—for postresident physicians and dentists—is intended to strengthen cancer teaching programs by supporting outstanding young clinicians in academic careers, upon completion of their specialty training.

Fellows put their special skills and knowledge to work through their professional societies, teaching activities, participation in hospital cancer programs and their private practices. Many new departments and divisions of oncology in hospitals and medical schools are now headed by former ACS Fellows. During 1982-1983, training will be supported for approximately 335 Regular Clinical Fellows and 146 Junior Faculty Clinical Fellows.

The ACS supports a program for Professors of Clinical Oncology designed to bring about more effective management of cancer patients by improving cancer teaching in medical schools. Each grant pays up to $25,000 a year for 3-5 years toward the salary of each of the current 18 ACS Professors of Clinical Oncology.

UNPROVEN METHODS OF CANCER MANAGEMENT

The American Cancer Society maintains an extensive reference center for the collection and dissemination of data on unproven methods of cancer management. This information is available on request to physicians, science writers, editors and the general public, to assist in evaluating claims made for unproven methods of cancer prevention, detection, diagnosis and treatment.

ACS Divisions are actively involved in encouraging passage of state legislation to curb the use of unproven methods of fighting cancer.

One well-known example of unproven methods is laetrile, a substance extracted from apricot pits. After exhaustive and repeated tests by many clinical and research institutions, the American Cancer Society, the U.S. Food and Drug Administration and most major medical institutions concluded that laetrile was not effective in the prevention or treatment of cancer in humans.

In April, 1981, the National Cancer Institute completed a series of clinical trials confirming that laetrile is of no value in the management of human cancer.

Many other unproven methods of cancer management also are being followed closely. Those the Society feels do not conform to established medical, scientific, ethical or legal standards are reviewed regularly for any change in their status.

Occasionally new evidence shows some of these methods to have some benefit against cancer, and the ACS position on them is revised accordingly. The Society always welcomes new developments which have been proven scientifically effective and safe in the prevention, detection, diagnosis or treatment of cancer.

SERVICE AND REHABILITATION

As part of its comprehensive efforts in cancer control, the American Cancer Society conducts extensive Service and Rehabilitation programs to assist patients and their families. In 1982, these programs reached more than 400,000 patients.

Among the different kinds of help provided by ACS Units and Divisions are:

(1) Up-to-Date Cancer Information and Referral for patients and their families so they will know what to expect and where to turn for help in their community. (2) Home Care Services, providing loans and gifts of sickroom supplies and special comfort items for the homebound patient, such as hospital beds and wheelchairs, dressings, wigs and walkers. (3) Transportation for cancer patients, provided by volunteers who take them to and from doctors' offices, clinics and hospitals for outpatient treatment. (4) Visitation programs that offer patients a one-to-one relationship with someone who has been through and coped successfully with their specific kind of cancer. (5) Intensive patient/family education programs that bring health professionals into direct contact with patients and their families in small groups. (6) Other support groups and self-help groups that serve a variety of special needs of cancer patients and their families.

REACH TO RECOVERY

Reach to Recovery, for breast cancer patients, is one of the first and largest of the patient visitation programs. Volunteers, women who have already adjusted successfully to their own mastectomies, visit new patients with their physician's consent, both before and after surgery. They serve as living proof that women who have had a mastectomy can look attractive and return to active, normal lives.

This program also provides information to post-mastectomy patients who are considering breast reconstruction. Newly updated materials also focus on the special needs of minority groups and single women who have had breast cancer treatment. Through this program, women can make informed choices on most aspects of cancer rehabilitation.

CANSURMOUNT

This patient visitation program began in Colorado and has now spread to many parts of the United States as well as a number of other countries. Its one-to-one format is similar to Reach to Recovery, but it involves all kinds of cancer, matching each volunteer and patient as closely as possible.

With approval of the attending physician, these carefully selected and trained volunteers provide invaluable help—someone for the patient to see and talk with who has successfully coped with the same kind of cancer and the same treatment. Confidentiality is maintained in all cases.

OTHER PATIENT PROGRAMS

International Association of Laryngectomees (IAL)—Members of this ACS-affiliated network of 313 clubs have had their larynx (voice box) removed, usually because of cancer. They visit new patients in their homes and hospitals, and offer encouragement and support as the new laryngectomee learns new ways of speaking.

Ostomee Rehabilitation Program—Some patients with intestinal or urinary cancers must have abdominal stomas—surgically-constructed openings for the elimination of body wastes. ACS Divisions work closely with the United Ostomy Association in helping these individuals adjust.

PATIENT EDUCATION

I Can Cope—is a patient/family education program designed to offer information about cancer, its treatments and ways of coping with the physical and emotional effects of the disease. Classes are taught by physicians, nurses, social workers and other community professionals.

The Society now is planning an expansion of its patient education services, and is preparing a variety of pamphlets, books, and audiovisual aids to help patients and their families understand the complexities of cancer and how to deal with them.

SUPPORT GROUPS

Candlelighters—This support organization for parents of children and adolescents with cancer works closely with Units and Divisions of the Society. A nationally distributed newsletter discusses ongoing activities.

Local Programs—A number of Units and Divisions have organized self-help and discussion groups for patients and their families. Sessions are frequently led by health professionals.

EVOLVING PROGRAMS

Transportation—The need for more volunteers to help transport patients to medical facilities prompted the National Society to adopt a highly successful Massachusetts program called Road to Recovery. Making maximum use of media recruitment, that Division was able to increase its force of volunteers by 400%. The program emphasizes the training of volunteer drivers.

Information—The increasing demand by patients and their families for up-to-date, comprehensive cancer information has resulted in the National Society taking a more active role in providing this kind of information. A number of new initiatives are now in the development stage and will be announced in the near future.

CANCER AND THE ENVIRONMENT

Most cancer cases in the United States are believed to be environmentally related; that is, associated in some way with our physical surroundings, personal habits or lifestyles.

Occupational hazards, although associated with only a small percentage of cancers, are under close surveillance. Virtually every major chemical and other substance in the workplace presumed to be a health hazard is under investigation. Each study, however, can require years and hundreds of thousands of dollars to complete.

Some environmental causes of cancer are well-known. About 25% of all cancers are directly related to the use of tobacco, either alone or in conjunction with excessive consumption of alcohol.

Other causes are harder to determine. Diet is suspected as an important element in cancer risk. However, dietary factors are difficult to study, and so far, the evidence has not been conclusive.

To help identify environmental factors in human cancer, the American Cancer Society has undertaken a three-part program of environmental cancer research. This involves (1) Cancer Prevention Study II, a new epidemiologic study to examine the relationship of environment and lifestyle to cancer development; (2) studies of groups exposed to industrial substances suspected of causing cancer, and (3) support of extramural cancer cause and prevention research projects.

CANCER PREVENTION STUDY II

September 1, 1982 marked the start of one of the largest research studies ever to be carried out in the United States. Cancer Prevention Study II, a long-term prospective study, will examine the habits and exposures of more than one million Americans to learn how lifestyles and environmental factors affect the development of cancer.

Modeled after the first ACS Cancer Prevention Study (conducted from 1959-1972), CPS-II is similar in method of operation, but is wider in scope and surpasses the first in size.

Over 100,000 volunteers were mobilized to enroll more than one million men and women in the study. These volunteer researchers distributed a four-page confidential questionnaire to participants, who were asked about their exposures to certain environmental conditions, their history of diseases and their lifestyle habits. The questionnaires each were designed to elicit over 500 pieces of information, which will be computerized for statistical analysis.

Many of the questions focus on health issues of current concern. These include risks of certain drugs, foods and various occupational exposures; low-tar and nicotine cigarettes, consumer products, long-term exposure to low-level radiation, and the health effects associated with air and water pollution.

During the next six years, and possibly longer, the volunteers will keep track of the status and whereabouts of study participants. Follow-ups are scheduled for 1984, 1986 and 1988. When enrollees die, their official death records will be obtained. Various suspected relationships will be tested by comparing mortality records to information in the questionnaires.

The study's goal is to identify those factors that

increase a person's chances of getting cancer, those that carry little or no risk, and those that actually may help to prevent cancer. With this information, the Society hopefully will be able to design and promote more effective educational programs in cancer prevention.

The Society's first Cancer Prevention Study resulted in important findings about health and disease. Study data provided overwhelming evidence that cigarette smoking is the major cause of lung cancer and an important factor in other cancers. It also furnished information on risks of heart disease and other serious illnesses, and revealed a relationship between obesity and certain cancers.

Since the first study, new factors in our environment have been identified that may be related to cancer. The Society decided to initiate a second study to respond to concerns of the public and scientific community about suspected carcinogens.

Without the use of ACS volunteers, the cost of carrying out the study would total more than $100 million. With volunteers to collect the data, the study is estimated to cost only about $9 million to complete.

STUDIES OF OCCUPATIONAL GROUPS

A number of studies of industrial workers exposed to various agents have been undertaken in the Society's Intramural Research Program; the findings will have considerable public health implications.

It has been established that asbestos workers have a high risk of lung cancer, gastrointestinal cancer and other conditions Less clear, though, is the hazard asbestos exposure poses for the general population, particularly among people exposed to very low levels.

The ACS is now studying the mortality of family members of asbestos factory workers and insulation workers to determine if they are at an increased risk of lung cancer and other asbestos-related diseases.

A study of shipyard workers will offer data on this group's cancer incidence and mortality rates.

In a current study, it may be learned how smoking cessation affects the lung cancer risk of insulation workers who no longer work with asbestos materials.

Other occupational groups under continuing investigation include vinyl chloride workers, painters, rubber plant employees, those who work with polychlorinated biphenyls (PCB's), printing press workers, and health care and hospital employees.

SPECIAL INSTITUTIONAL GRANTS

As part of its continuing program to provide substantial and relatively long-term support for major institutions engaged in cancer cause and prevention research, the American Cancer Society this year awarded grants to the following:

- The American Health Foundation, New York, N.Y., to conduct hospital-based epidemiologic studies, health behavior evaluations, and the biochemical analyses of various consumer products. Dr. Ernst Wynder is the principal investigator.
- Temple University School of Medicine, Philadelphia, Pa., to support an ongoing study of cancer prevention and analyses of chemical and environmental carcinogens. Dr. Peter Magee heads the program.
- Memorial-Sloan Kettering Cancer Center, New York, N.Y., for a project to identify candidates at high risk to colorectal cancer. This is led by Dr. Martin Lipkin.
- University of Minnesota, Minneapolis, for a study of inhibitors of carcinogenesis found in diet. Dr. Lee Wattenberg heads the study.

Three previous grants are still in effect. The recipient institutions are:

- Mount Sinai School of Medicine, New York, N.Y., to provide a means of collecting and disseminating information on environmental cancers.
- The Johns Hopkins University School of Medicine, Baltimore, Md. to investigate BHA, a common nontoxic food additive, and the mechanism of its protective effects.
- The University of Southern California School of Medicine, Los Angeles, to study the possible relationship of cancer to specific occupational, drug or other environmental exposures among two occupational groups.

COSTS OF CANCER

Because of lack of data in many areas, the real costs of cancer are very difficult to judge. Several studies indicate that direct cancer costs in the United States were about $9.1 billion for the year 1977. Included in this figure are hospital and outpatient expenses, physicians' fees, nursing services, home care and drugs.

Indirect economic costs, including lost wages and the forced liquidation of tangible assets, have been es-

timated at between $12.7 and $17.1 billion for the year 1975.

The Third National Cancer Survey indicates that some $3.5 billion was spent in 1976 on hospital costs for patients with cancer. The (former) Department of Health, Education and Welfare calculated that hospital expenses make up a greater proportion of the total direct costs of cancer than they do for diseases in general.

Individual costs vary considerably, depending on the location of the cancer, possible recurrences and the extent of follow-up care. Daily hospital fees alone can run $200 or more a day, and each course of therapy can amount to several thousand dollars.

A few years ago, *Consumer Reports* estimated the average cancer patient's medical bill at $20,000. This figure can be matched by the indirect costs of cancer, which range from transportation to home nursing to loss of income.

Individuals have several sources of help in paying for cancer costs: third-party payers such as Blue Cross and private insurance companies, public agencies and private health organizations. Cancer is covered by personal insurance plans either under narrowly defined cancer policies or through catastrophic illness provisions in comprehensive insurance programs.

The Third National Cancer Survey shows that for patients under 65 years, Blue Cross and private insurers were the source of payment in over 77% of the cases. For patients over 65, Medicare paid expenses in nearly 88% of the cases.

Hospital costs can be reduced substantially through the use of nursing facilities, hospices for advanced cancer patients, and home care with periodic professional medical visits. Various studies have estimated home care to average $10-15 a day.

SOURCES OF INCOME

Financial support of the American Cancer Society in fiscal 1982 is estimated to exceed $170 million from public sources. The Cancer Crusade raised about $124 million. National Headquarters and chartered Divisions received some $46 million from bequests and legacies. The Public has given generous and growing support to the Crusade over the years. In 1946, for example, the Society raised over $10 million. Thirty-five years later, in 1981, that figure had soared to more than $170 million.

Legacies — in which the Society becomes beneficiary of willed funds -- are an increasingly important source of ACS income. Income from legacies indicates confidence in the leadership of the Society and a determination by many Americans to continue the fight against cancer even after their lifetimes. Legacy income in relation to Crusade receipts is shown below.

Year	Crusade	Legacies	Year	Crusade	Legacies
1972	62,044,243	16,774,295	1977	90,120,508	24,605,566
1973	67,784,862	25,228,782	1978	95,927,848	30,178,722
1974	72,152,315	24,116,620	1979	102,778,011	39,360,721
1975	78,788,160	31,056,259	1980	113,325,055	41,366,087
1976	84,882,450	33,968,066	1981	124,615,571	45,792,632

THE AMERICAN CANCER SOCIETY

The American Cancer Society, Inc., is a national voluntary health organization of 2 1/2 million Americans united to conquer cancer through balanced programs of research, education and patient service and rehabilitation. Its symbol is the Sword of Hope — a double-edged blade with twin serpent caduceus to emphasize the medical and scientific aspects of the Society's program; it appears on all ACS materials and is displayed at meetings, lectures, exhibits and film showings.

Organization: The American Cancer Society, Inc., is composed of a National Society, with 58 chartered Divisions and 3,128 local Units.

The National Society: A 194-member House of Delegates provides a basic representation from the 58 Divisions and additional representation on the basis of population. It elects and is governed by a Board of Directors of 119 voting members, approximately half of whom are members of the medical or scientific professions.

The National Society is responsible for overall planning and coordination, and provides technical help and materials to Divisions and Units. The National Society administers programs of research, medical grants and clinical fellowships, and is charged with carrying out public and professional education on the

national level.

The 58 Divisions: These are governed by 3,847 members of Divisional Boards of Directors, both medical and lay, in all the states plus six metropolitan areas, the District of Columbia and Puerto Rico.

The Units: These are organized to cover the 3,130 counties in the U.S. There are more than 77,000 community leaders who direct the Society's programs at this level. The basic strength of the Society lies in the loyal ranks of volunteers fighting cancer in their communities.

The Programs: The Society maintains its priorities and goals through activities developed by the departments of Research, Professional Education, Public Education, Public Information, Epidemiology and Statistics, Service and Rehabilitation and Crusade.

RESEARCH

The American Cancer Society is one of the largest sources of cancer research funds in the United States, second only to the National Cancer Institute, an agency of the Federal government.

The Society's overall investment in research each year has grown steadily from $1 million in 1946 to nearly $58 million* today. This sum represents nearly a third of the total ACS budget. To date, the Society has invested more than half a billion dollars in cancer research.

The program focuses primarily on investigator-initiated projects rather than directed research undertaken on a contract basis. With the exception of staff and facilities to carry out its epidemiological studies, (see next section) ACS neither hires researchers nor operates its own laboratories. This enables the Society to place its grants where innovative and promising ideas are being explored.

A key factor in the role of the Society in cancer research is providing qualified scientists with alternative sources to carry on their work. The Society believes it can make most effective use of its research funds by supporting scientists working in established medical institutions across the country. In this way there is a minimum of overhead and a maximum of flexibility to make sure that research money yields results. Applications for ACS grants are put through a rigorous process of evaluation beginning with careful study by the appropriate one of ten scientific review committees, evaluation by two additional groups of experts, and ending with final approval by the National Board of Directors.

KINDS OF GRANTS

The Society's research program is diverse in concept and recipients. It provides support both for established scientists, and for those starting out on their own independent research; it funds postdoctoral training for promising young investigators and provides fluid funds to stimulate new ideas in cancer research in universities, institutes and teaching hospitals around the country. Overall, the program offers five types of grants: (1) Research and Clinical Investigation Grants to finance investigator-initiated research; (2) Institutional Research Grants to universities, institutes and hospitals to support pilot studies and the work of young investigators in the cancer field; (3) Research Personnel Grants to outstanding scientists and postdoctoral fellows specializing or planning to specialize in cancer research; (4) Research Development Program Grants to provide rapid funding for priority projects; and (5) Special Institutional Grants for Cancer Cause and Prevention Research to provide longer-term funding.

Research Professorships — The Research Professorship grant program, unique in the field, has been in existence since 1957. The Society invests $700,000 in it each year to support 21 of the nation's most gifted scientists. These are people devoting their lives' work to cancer research. Freed of major administrative responsibilities and other restrictions, they can concentrate on their chosen fields of scientific investigation.

Physician's Research Training Fellowships — Unique in the research world, this new type of Research Personnel Grant was inaugurated in 1981 because of a dearth of MD's in the research field. It provides an opportunity for physicians to take time out from their medical careers over a two-year period and train as researchers. MD's clinical experience is an important asset in conducting research, a field which has primarily attracted Ph.D's.

Research Development Program — This was established to identify and provide rapid funding for high priority projects. Approved applications can be funded in less than three months from the date submitted. This compares with the 10 to 18 months required by the Federal government before a new approved application can be funded.

The kinds of research projects eligible under the Research Development Program include: (1) unique research opportunities which cannot wait for the normal lengthy funding procedures; (2) unanticipated needs relating to research already under way; (3) program coordination, especially that involving clinical trials and the dissemination of research results to

*Subject to audit

community hospitals; and (4) program integration between the American Cancer Society and other health organizations.

All applications are evaluated for — among other considerations — merit, qualifications and productivity of the investigator, relevance, need for rapid funding, and probability of the project's eventual contribution to cancer control. More than $10 million has been appropriated so far to the Research Development Program, over half of which has been for interferon research.

Interferon Research — Interferon, a natural body protein, was first discovered as an antiviral agent and later found to have some anticancer activity. In 1978, the Society invested an unprecedented $2 million to purchase interferon for clinical trials. The substance was extremely scarce and expensive, since it is obtained from human blood cells.

The first tests are being performed on carefully selected patients in 11 U.S. institutions, and includes 150 patients in all. Six cancers are under study — multiple myeloma, melanoma, breast cancer, non-Hodgkin's lymphoma, soft tissue sarcoma and kidney cancer.

So far, a number of patients have shown some response to interferon, ranging from those whose steady downhill course was stabilized, to those whose tumors disappeared entirely. It is still too early to tell what the long-term effects will be.

In working with IF, scientists discovered that there are at least three different types, each produced by different cells, and potentially capable of different activity. In addition, large quantities of IF can now be produced using the technique of recombinant DNA. It is far cheaper and purer than the original human blood substance.

In early 1980 the Society allocated an additional $4.8 million for interferon research.

Besides the American Cancer Society, sponsors of interferon research in this country include the National Cancer Institute and the National Institute of Allergy and Infectious Diseases.

Ultimately, interferon may be valued not so much for itself, as for its role in heralding a whole new class of compounds called "biologic response modifiers," which will fight cancer by stimulating the body's immune system.

ACS RESEARCH IN THE '80s

In addition to ongoing IF studies, ACS-funded researchers will continue to investigate broad areas of cancer research in the coming decade. For example, they will be exploring:

Genetic engineering. One technique in this new technology, recombinant DNA, (gene splicing) is already being used to produce interferon. It has among its potential uses the manufacture of powerful new drugs, correcting impaired immune systems, even modifying heredity by transplanting foreign genes. It is hoped that the process will yield other anti-cancer activities.

Man-made antibodies such as hybridomas (antibody factories) and the highly specific monoclonal antibodies. Scientists are seeking to find out whether a monoclonal antibody can be produced that will recognize cancer cells only, and thus be able to detect cancer early, before clinical signs appear. Can they be used as a vehicle to deliver drugs directly to a tumor, killing it but sparing healthy tissue?

Mechanisms of carcinogenesis. Investigators are approaching this key question from many angles. One theory posits that cancer in humans could develop in a two-step process — initiator and promotor — as has been found in animals. Other questions include: Is there an oncogene, a master switch that activates cancer cells already residing in the body? If so, where is it, what turns it on? Can it be programmed to stay off? Are viruses, already known to cause cancer in animals and birds, causing cancer in humans? Will more knowledge of herpes virus lead to an answer to cancer?

Chemoprevention. Can people be protected from cancer by the substances they eat or drink, or by chemicals in the environment that serve as defense mechanisms? Clues are being pursued by ACS researchers studying such agents as vitamin A; retinoids (synthetic forms of vitamin A); vitamin C; vitamin E; the chemical element selenium found in the soil. They are looking into the protective enzyme action of the food preservative BHS; they're studying foods such as cabbage, cauliflower, broccoli, Brussels sprouts; others are trying to determine why orange oil added to an animal's diet inhibits cancers of the stomach and lung induced in the laboratory.

Still other ACS investigators are looking for ways to detect cancer earlier by tracing a cell's *biochemical markers;* exploring evidence that the outbreak of the rare skin cancer, Kaposi's sarcoma, is linked to a breakdown in the individual's *immune system;* testing the hypothesis that certain chemicals enhance a tumor's receptivity to radiation therapy.

THE FINANCIAL RESEARCH PICTURE

In fiscal 1982, the ACS made 681 grants to major institutions in this country and to scientists working

both here and abroad. The total amount, subject to audit, was nearly $54 million. This does not include some $2.5 million granted directly by ACS Divisions. The following table — covering the years 1980 to 1982 inclusive — lists the number of applications received, the total number of dollars required, and those actually funded by the ACS National Office. ACS allocates its funds to effectively carry out its three-pronged attack against cancer: Research, Education and Service.

	REQUESTED		FUNDED	
Year	Number	Amount	Number	Amount
1980	1,931	188,032,301	721	45,615,789
1981	2,069	230,936,242	672	51,960,530
1982	2,475	300,961,755	681	53,953,831

ACS-SUPPORTED NOBELISTS

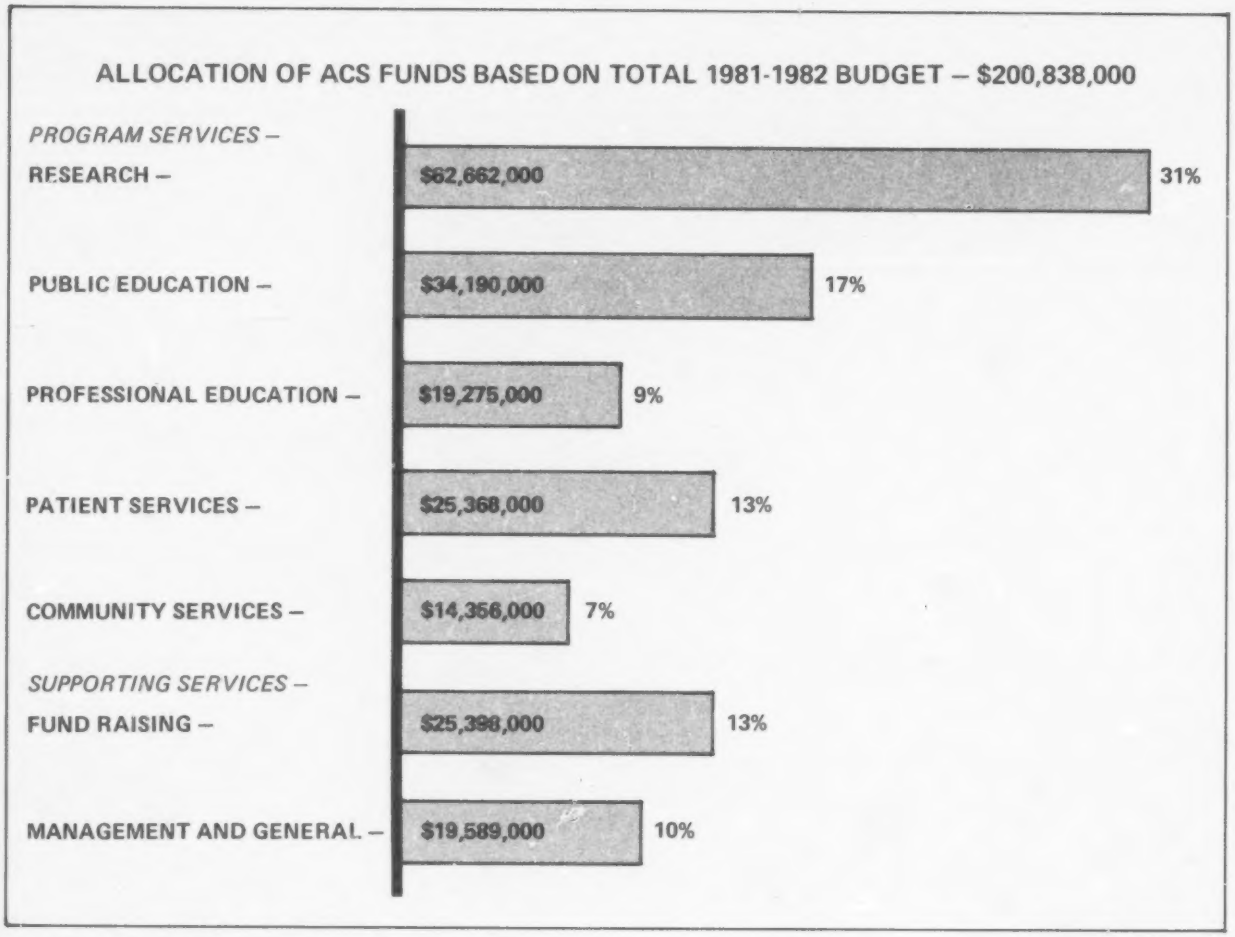
Since 1946 when Wendell Stanley became the first ACS grantee to receive a Nobel Prize for his work with viruses, 17 other scientists who have received ACS grants have also won Nobel Prizes. Among them: ACS Research Professor Walter Gilbert, Ph.D. and ACS grantee Paul Berg, Ph.D., who shared the 1980 Prize in Chemistry with an English investigator. Gilbert had developed ways to determine the order of a gene's building blocks; Berg pioneered techniques for gene-splicing. A winner of the 1980 Nobel Prize in Medicine was former ACS grantee Baruj Benacerraf, M.D. ACS Research Professors Drs. David Baltimore and Howard Temin shared the 1975 Nobel Price for Medicine with Dr. Renato Dulbecco, a former ACS grantee, for their work in viruses and genetics.

Other Nobel-winning investigators who received ACS funding include: Drs. Daniel Nathans and Hamilton O. Smith, 1978; Dr. Salvador Luria, 1969; Dr. Robert W. Holley, 1968; Dr. Charles Huggins, 1966; Dr. Peyton Rous, 1966; Dr. James Watson, 1962; Dr. Severo Ochoa, 1959; Drs. George W. Beadle and Edward Tatum in 1958; and Dr. Fritz Lipmann, 1953.

HOW TO ESTIMATE CANCER STATISTICS LOCALLY

Community Population	Estimated No. Who are Alive, Cured of Cancer	Estimated No. Cancer Cases Under Medical Care in 1983	Estimated No. Who Will Die of Cancer in 1983	Estimated No. of New Cases in 1983	Estimated No. Who Will be Saved from Cancer in 1983	Estimated No. Who Will Eventually Develop Cancer	Estimated No. Who Will Die of Cancer if Present Rates Continue
1,000	10	5	1	3	1	280	180
2,000	20	11	4	7	3	560	360
3,000	30	16	5	10	4	840	540
4,000	40	21	7	13	5	1,120	720
5,000	50	26	9	16	6	1,400	900
10,000	100	52	18	33	12	2,800	1,800
25,000	250	131	45	79	30	7,000	4,500
50,000	500	162	90	158	59	14,000	9,000
100,000	1,000	525	180	325	122	28,000	18,000
200,000	2,000	1,050	360	650	244	56,000	36,000
500,000	5,000	2,625	900	1,575	590	140,000	90,000

NOTE: The figures can only be the roughest approximation of actual data for your community. It is suggested that every effort be made to obtain actual data from a Registry source.



*Figures taken from 1981 Annual Report

CANCER'S 7 WARNING SIGNALS

Change in bowel or bladder habits

A sore that does not heal

Unusual bleeding or discharge

Thickening or lump in breast or elsewhere

Indigestion or difficulty in swallowing

Obvious change in wart or mole

Nagging cough or hoarsness

If YOU have a warning signal, see your doctor!

SUMMARY OF RESEARCH GRANTS & FELLOWSHIPS AWARDED BY ACS (NATIONAL SOCIETY & DIVISIONS) DURING FISCAL YEAR ENDED AUGUST 31, 1982
(SUBJECT TO AUDIT)

Agricultural Research Service, East Lansing, Mich.	(1)	290,000.00
Alabama, University of, Birmingham	(5)	497,439.00
American Health Foundation, New York, N.Y.	(1)	989,750.00
American Type Culture Collection, Rockville, Md.	(1)	175,000.00
Arizona University, Tucson	(4)	472,500.00
Baltimore Cancer Res. Ctr., Md.	(1)	50,000.00
Baylor College of Medicine, Houston, Tex.	(5)	419,915.00
Beth Israel Hospital, Boston, Mass.	(1)	87,500.00
Boston University, Boston, Mass.	(1)	63,000.00
Brandeis University, Waltham, Mass.	(3)	163,033.00
Brown University, Providence, R.I.	(6)	387,528.00
California Institute of Technology, Pasadena, Calif.	(3)	132,307.00
California, U. of, Calif. (Various Locations)	(59)	4,412,001.00
Cancer Research Inc., New York, N.Y.	(1)	86,000.00
Lenox Hill Hospital, New York, N.Y.	(1)	112,500.00
Carnegie Institute of Washinton, Baltimore, Md.	(1)	80,000.00
Case Western Reserve University, Cleveland, Ohio	(4)	317,857.00
Chicago Medical School, Ill.	(1)	137,705.00
Chicago, University of, Ill.	(13)	938,916.00
Children's Cancer Research Foundation, Boston, Mass.	(4)	213,922.00
Children's Hospital Medical Center of Northern Calif., Oakland	(2)	231,436.00
Cincinnati, University of, Ohio	(3)	174,764.00
Clark University, Worcester, Mass.	(1)	37,428.00
Cold Spring Harbor Lab., Cold Spring Harbor, N.Y.	(3)	250,000.00
College of Medicine and Dentistry of New Jersey	(1)	60,000.00
Colorado State University, Fort Collins	(1)	47,500.00
Colorado, University of, Boulder	(15)	1,596,562.00
Columbia University, New York, N.Y.	(8)	489,685.00
Community Blood Council of Greater New York	(1)	58,000.00
Connecticut, University of, Storrs	(3)	214,964.00
Cornell University, Ithaca, N.Y.	(3)	126,627.00
Cornell University, New York, N.Y.	(1)	61,500.00
Dartmouth College, Hanover, N.H.	(3)	134,738.00
Duke University, Durham, N.C.	(4)	381,468.00
Eastern Virginia Medical School, Norfolk, Va.	(1)	133,137.00
Eleanor Roosevelt Inst. for Cancer Research, Denver, Colo.	(2)	165,000.00
Florida State University, Tallahassee, Fla.	(1)	125,000.00
Florida, University of, Gainesville	(3)	127,125.00
Foundation for Blood Research, Scarborough, Me.	(1)	100,000.00
Fred Hutchinson Cancer Res. Ctr., Seattle, Wash.	(10)	926,485.00
Georgetown University, Washington, D.C.	(2)	75,484.00
Hahnemann Medical College, Philadelphia, Pa.	(1)	10,000.00
Harbor-UCLA Med. Center, Torrence, Calif.	(1)	50,000.00
Harvard School of Public Health, Boston, Mass.	(2)	116,673.00
Harvard University, Boston, Mass.	(27)	1,465,758.00
Hawaii, University of, Honolulu	(2)	95,177.00
Illinois, University of, Urbana	(4)	269,660.00
Indiana, University of, Bloomington	(4)	313,445.00
Institute for Cancer Res. Philadelphia, Pa.	(3)	121,225.00
Institute for Med. Res. of Santa Clara City	(1)	10,428.00
Institut De Chimie Biologique, France	(2)	65,800.00
Iowa, State University of, Iowa City	(1)	40,000.00
Jackson Laboratory, Bar Harbor, Me.	(2)	131,555.00
Jefferson Medical College, Philadelphia, Pa.	(1)	87,413.00
Jewish Hospital, St. Louis, Mo.	(1)	63,000.00
Johns Hopkins University, Baltimore, Md.	(14)	867,292.00
Kansas State University, Manhattan	(1)	82,876.00
Kansas, University of, Lawrence	(4)	305,623.00
Kentucky, University of, Lexington	(3)	408,[illegible].00
Long Island College Hospital, Brooklyn, N.Y.	(1)	86,000.00
Louisiana State University, Baton Rouge	(1)	97,733.00
Louisville, University of, Louisville, Ky.	(2)	252,065.00
Maryland, University of, Baltimore	(4)	302,565.00
Massachusetts Institute of Technology, Cambridge, Mass.	(23)	1,354,571.00
Massachusetts, University of, Amherst, Mass.	(2)	214,122.00
Mayo Foundation, Rochester, Minnesota	(2)	171,738.00
Medical College of Wisconsin, Milwaukee	(2)	128,500.00
Medical Research Council, England	(1)	33,000.00
Miami, University of, Coral Gables, Fla.	(1)	35,000.00
Michigan Cancer Foundation, Detroit, Mich.	(1)	117,367.00
Michigan State University, East Lansing	(2)	113,800.00
Michigan, University of, Ann Arbor	(6)	516,885.00
Minnesota, University of, Minneapolis	(8)	1,691,480.00
Montana, University of, Missoula	(1)	22,500.00
Montefiore Hospital, New York, New York	(1)	27,862.00
Mount Sinai School of Medicine, New York, N.Y.	(5)	611,455.00
National Academy of Sciences, Washington, D.C.	(1)	29,000.00
NCI-Lab. of Molecular Virology, Bethesda, Md.	(1)	7,500.00
National Jewish Hospital and Research Center, Colo.	(2)	271,000.00
New England Med. Ctr. Hosp., Boston, Mass.	(3)	247,578.00
New Mexico, University of, Albuquerque, N.M.	(1)	140,000.00
New Mexico State University, Las Cruces	(1)	28,319.00
New York State Psychiatric Institute	(1)	10,000.00
New York University, New York	(11)	731,761.00
NIH Biochemistry Lab, Bethesda, Md.	(1)	32,000.00
North Carolina, University of Chapel Hill	(7)	763,832.00
Northwestern University, Chicago, Ill.	(2)	165,000.00
Oak Ridge Assoc. Univ., Inc., Oak Ridge, Tenn.	(1)	73,375.00
Ohio State University, Columbus	(2)	187,426.00
Oklahoma Medical Research Fndtn., Oklahoma City	(1)	95,643.00
Oregon State College, Corvallis	(4)	209,400.00
Oregon, University of, Eugene	(2)	225,768.00
Papanicolaou Cancer Research Institute, Miami, Fla.	(1)	24,459.00
Pennsylvania State University, University Park	(3)	54,000.00
Pennsylvania, University of, Philadelphia	(8)	549,089.00
Peralta Hospital Association, Oakland, Calif.	(1)	24,033.00
Peter Bent Brigham Hospital, Boston, Mass.	(1)	62,941.00
Pittsburgh, University of, Pittsburgh, Pa.	(2)	95,000.00
Princeton University, Princeton, N.J.	(5)	338,014.00
Public Health Research Institute, New York, N.Y.	(2)	145,000.00
Purdue University, Lafayette, Ind.	(4)	257,176.00
Rochester, University of, Rochester N.Y.	(2)	85,000.00
Rockefeller University, New York, N.Y.	(9)	834,374.00
Roger Williams General Hospital, Providence, R.I.	(1)	103,375.00
Roswell Park Memorial Institute, Buffalo, N.Y.	(10)	529,692.00
Salk Institute for Biological Studies, San Diego, Calif.	(6)	188,088.00
Scripps Clinic Research Foundation, La Jolla, Calif.	(9)	697,472.00
Sidney Farber Cancer Center, Boston, Mass.	(13)	823,804.00
Sloan-Kettering Institute for Cancer Res., N.Y., N.Y.	(23)	2,800,698.00
Sloan-Kettering Institute, Westchester, N.Y.	(3)	154,581.00
South Carolina, University of, Columbia	(2)	81,311.00
Southern California, University of, Los Angeles	(5)	338,976.00
Southern Research Institute, Birmingham, Ala.	(2)	162,414.00
St. Francis General Hospital, Pittsburgh, Pa.	(1)	133,664.00
St. Jude Children's Res. Hosp., Memphis, Tennessee	(3)	210,000.00
St. Louis University, St. Louis, Mo.	(2)	175,750.00
Stanford University, Stanford, Calif.	(27)	1,842,625.00
State University of New York, Albany	(1)	32,500.00
State University of New York at Albany, N.Y.	(1)	53,233.00
State University of New York, Brooklyn, N.Y.	(1)	85,610.00
State University of New York, Buffalo, N.Y.	(2)	166,754.00
State University of New York at Stony Brook	(9)	616,091.00
Temple University, Philadelphia, Pa.	(2)	698,194.00
Tennessee, University of, Memphis, Tenn.	(2)	248,032.00
Texas, University of Texas (Various Locations)	(26)	1,995,319.00
Tufts University, Medford, Mass.	(4)	259,257.00
Tufts New England Medical Center, Boston, Mass.	(1)	10,000.00
Tulane University, New Orleans, La.	(1)	25,000.00
University Hospital, Boston, Mass.	(1)	167,808.00
University of Vermont Reg. Cancer Ctr., Burlington, Vt.	(1)	50,000.00
Utah, University of, Salt Lake City	(4)	194,402.00
Vanderbilt University, Nashville, Tenn.	(5)	162,000.00
Vermont, University of, State Agric. College, Burlington, Vt.	(1)	125,822.00
Virginia Commonwealth University, Richmond, Va.	(1)	63,126.00
Virginia, Medical College of, Richmond	(3)	186,447.00
Virginia, University of, Charlottesville	(6)	703,072.00
Wake Forest College, Winston-Salem, N.C.	(2)	262,500.00
Washington, State College of, Pullman, Wash.	(1)	45,000.00
Washington State University, Pullman, Wash.	(1)	25,000.00
Washington, University of, Seattle	(6)	505,122.00
Washington University, St. Louis, Mo.	(13)	1,038,470.00
Wayne State University, Detroit, Mich.	(3)	240,287.00
West Fla. Can. Res. Fdtn. Inc., Pensacola, Fla.	(1)	17,331.00
West Virginia University, Morgantown	(1)	25,745.00
Whittier Institute for Diabetes & Endocrinology, La Jolla, Cal.	(1)	38,650.00
Wisconsin, University of, Madison, Wisc.	(11)	825,554.00
Wistar Inst. of Anat. and Bio., Philadelphia, Pa.	(5)	600,922.00
Worcester Fdtn. for Exper. Bio., Shrewsbury, Mass	(2)	175,000.00
Yale University, New Haven, Conn.	(28)	2,023,571.00
Yeshiva University, Bronx, N.Y.	(25)	1,905,558.00
Eleanor Roosevelt-ACS International Cancer Fellowships	(1)	425,000.00
Professional Programs of the UICC	(1)	80,000.00
Subtotal 681		53,953,831.00
Division Research Grants		2,500,000.00
Total		56,453,831.00

Note: Numbers in parentheses indicate number of grants per institution for the year ended August 31, 1982; totals subject to audit.

COMPREHENSIVE CANCER CENTERS

The institutions listed have been recognized as Comprehensive Cancer Centers by the National Cancer Institute. These centers have met rigorous criteria imposed by the National Cancer Advisory Board. They receive financial support from the National Cancer Institute, the American Cancer Society and many other sources.

ALABAMA
University of Alabama in Birmingham
Comprehensive Cancer Center
1824 6th Avenue South
Birmingham, Alabama 35294
Phone: (205)934-5077

CALIFORNIA
Los Angeles County-University of
Southern California Comprehensive
Cancer Center
2025 Zonal Avenue
Los Angeles, California 90033
Phone: (213) 224-7008

UCLA -Jonsson Comprehensive Cancer Center
924 Westwood Boulevard, Suite 650
Los Angeles, California 90024
Phone: (213) 825-5268

CONNECTICUT
Yale Comprehensive Cancer Center
Yale University School of Medicine
333 Cedar Street
New Haven, Connecticut 06510
Phone: (203) 432-4122

DISTRICT OF COLUMBIA
Vincent T. Lombardi Cancer Research Center
Georgetown University Medical Center
3800 Reservoir Road, N.W.
Washington, D.C. 20007
Phone: (202) 625-7066

Howard University Cancer Research Center
College of Medicine
Washington, D.C. 20059
Phone: (202) 745-1406

Howard University Cancer Center
Department of Oncology
2041 Georgia Avenue, N.W.
Washington, D.C. 20060
Phone: (202) 636-7697

FLORIDA
Comprehensive Cancer Center for the
State of Florida
University of Miami School of Medicine
1475 N.W. 12th Avenue
Miami, Florida 33136
Phone: (305)547-7707

ILLINOIS
Illinois Cancer Council
36 S. Wabash Avenue, Suite 700
Chicago, Illinois 60603
Phone: (312) 346-9813

Northwestern University Cancer Center
Ward Memorial Building
303 East Chicago Avenue
Chicago, Illinois 60611
Phone: (312) 226-5250

University of Chicago Cancer
Research Center
905 East 59th Street
Chicago, Illinois 60637
Phone: (312) 947-6386

University of Illinois
P.O. Box 6998
Chicago, Illinois 60680
Phone: (312) 996-6666

Rush-Presbyterian-St. Luke's
Medical Center
1753 West Congress Parkway
Chicago, Illinois 60612
Phone: (312) 942-6642

MARYLAND
Johns Hopkins Comprehensive Cancer Center
600 N. Wolfe Street
Baltimore, Maryland 21205
Phone: (301) 955-8822

MASSACHUSETTS
Sidney Farber Cancer Institute
44 Binney Street
Boston, Massachusetts 02115
Phone: (617) 732-3555

MICHIGAN
Michigan Cancer Foundation
110 East Warren Avenue
Detroit, Michigan 48201
Phone: (313) 833-0710

MINNESOTA
Mayo Comprehensive Cancer Center
200 First Street, S.W.
Rochester, Minnesota 55901
Phone: (507) 284-3311 or 284-8964

NEW YORK
Columbia University
Cancer Center/Institute of Cancer Research
Hammer Health Sciences Center
701 W. 168th Street
New York, New York 10032
Phone: (212) 694-6900

Memorial Sloan-Kettering Cancer Center
1275 York Avenue
New York, New York 10021
Phone: (212) 794-6561

Roswell Park Memorial Institute
666 Elm Street
Buffalo, New York 14263
Phone: (716) 845-5770

NORTH CAROLINA
Duke University
Comprehensive Cancer Center
P.O. Box 3814
Durham, North Carolina 27710
Phone: (919) 684-2282

OHIO
Ohio State University Comprehensive
Cancer Center
410 W. 12th Avenue
Columbus, Ohio 43210
Phone: (614) 422-5022

PENNSYLVANIA
The Fox Chase Cancer Center
7701 Burholme Avenue
Philadelphia, Pennsylvania 19111
Phone: (215) 728-2490

University of Pennsylvania Cancer Center
578 Maloney Building
3400 Spruce Street
Philadelphia, Pennsylvania 19104
Phone: (215) 662-3910

TEXAS
The University of Texas System Cancer Center
M.D. Anderson Hospital and Tumor Institute
MB 920
6723 Bertner Avenue
Houston, Texas 77030
Phone: (713) 792-6000

WASHINGTON
Fred Hutchinson Cancer Research Center
1124 Columbia Street
Seattle, Washington 98104
Phone: (206) 292-2930

WISCONSIN
The University of Wisconsin Clinical
Cancer Center
600 Highland Avenue
Madison, Wisconsin 53792
Phone: (608) 263-8610

CHARTERED DIVISIONS OF THE AMERICAN CANCER SOCIETY, INC.

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2926 Central Avenue
Birmingham, Alabama 35209
(205) 879-2242

Alaska Division, Inc.
1343 G Street
Anchorage, Alaska 99501
(907) 277-8696

Arizona Division, Inc.
634 West Indian School Road
P.O. Box 33187
Phoenix, Arizona 85067
(602) 264-5861

Arkansas Division, Inc.
5520 West Markham Street
P.O. Box 3822
Little Rock, Arkansas 72203
(501) 664-3480-1-2

California Division, Inc.
1710 Webster Street
P.O. Box 2061
Oakland, California 94604
(415) 893-7900

Colorado Division, Inc.
1809 East 18th Avenue
P.O. Box 18268
Denver, Colorado 80218
(303) 321-2464

Connecticut Division, Inc.
Barnes Park South
14 Village Lane
P.O. Box 410
Wallingford, Connecticut 06492
(203) 265-7161

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Academy of Medicine Bldg.
1925 Lovering Avenue
Wilmington, Delaware 19806
(302) 654-6267

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Universal Building, South
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009
(202) 483-2600

Florida Division, Inc.
1001 South MacDill Avenue
Tampa, Florida 33609
(813) 253-0541

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1422 W. Peachtree Street, N.W.
Atlanta, Georgia 30309
(404) 892-0026

Hawaii Division, Inc.
Community Services Center Bldg.
200 North Vineyard Boulevard
Honolulu, Hawaii 96817
(808) 531-1662-3-4-5

Idaho Division, Inc.
1609 Abbs Street
P.O. Box 5386
Boise, Idaho 83705
(208) 343-4609

Illinois Division, Inc.
37 South Wabash Avenue
Chicago, Illinois 60603
(312) 372-0472

Indiana Division, Inc.
4755 Kingsway Drive, Suite 100
Indianapolis, Indiana 46205
(317) 257-5326

Iowa Division, Inc.
Highway #18 West
P.O. Box 980
Mason City, Iowa 50401
(515) 423-0712

Kansas Division, Inc.
3003 Van Buren Street
Topeka, Kansas 66611
(913) 267-0131

Kentucky Division, Inc.
Medical Arts Bldg.
1169 Eastern Parkway
Louisville, Kentucky 40217
(502) 459-1867

Louisiana Division, Inc.
Masonic Temple Bldg., Room 810
333 St. Charles Avenue
New Orleans, Louisiana 70130
(504) 523-2029

Maine Division, Inc.
Federal and Green Streets
Brunswick, Maine 04011
(207) 729-3339

Maryland Division, Inc.
200 East Joppa Road
Towson, Maryland 21204
(301) 828-8890

Massachusetts Division, Inc.
247 Commonwealth Avenue
Boston, Massachusetts 02116
(617) 267-2650

Michigan Division, Inc.
1205 East Saginaw Street
Lansing, Michigan 48906
(517) 371-2920

Minnesota Division, Inc.
3316 West 66th Street
Minneapolis, Minnesota 55435
(612) 925-2772

Mississippi Division, Inc.
345 North Mart Plaza
Jackson, Mississippi 39206
(601) 362-8874

Missouri Division, Inc.
3322 American Avenue
P.O. Box 1066
Jefferson City, Missouri 65102
(314) 893-4807

Montana Division, Inc.
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Billings, Montana 59101
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8502 West Center Road
Omaha, Nebraska 68124
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4100 Boulder Highway
Suite A
Las Vegas, Nevada 89121
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686 Mast Road
Manchester, New Hampshire 03102
(603) 669-3270

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CN2201
North Brunswick, New Jersey 08902
(201) 297-8000

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5800 Lomas Blvd., N.E.
Albuquerque, New Mexico 87110
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6725 Lyons Street
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East Syracuse, New York 13057
(315) 437-7025

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Melville, New York 11747
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Raleigh, North Carolina 27611
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115 Roberts Street
P.O. Box 426
Fargo, North Dakota 58102
(701) 232-1385

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1375 Euclid Avenue
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Cleveland, Ohio 44115
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1312 N.W. 24th Street
Oklahoma City, Oklahoma 73106
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Oregon Division, Inc.
0330 S.W. Curry
Portland, Oregon 97201
(503) 295-6422

Pennsylvania Division, Inc.
Route 422 & Sipe Avenue
P.O. Box 416
Hershey, Pennsylvania 17033
(717) 533-6144

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Philadelphia, Pennsylvania 19107
(215) 665-2900

Puerto Rico Division, Inc.
(Avenue Domenech 273
Hato Rey, P.R.)
GPO Box 6004
San Juan, Puerto Rico 00936
(809) 764-2295

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345 Blackstone Blvd.
Providence, Rhode Island 02906
(401) 831-6970

South Carolina Division, Inc.
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Columbia, South Carolina 29205
(803) 256-0245

South Dakota Division, Inc.
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Hillcrest Plaza
Sioux Falls, South Dakota 57104
(605) 336-0897

Tennessee Division, Inc.
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Nashville, Tennessee 37204
(615) 383-1710

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3834 Spicewood Springs Road
P.O. Box 9863
Austin, Texas 78766
(512) 345-4560

Utah Division, Inc.
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Salt Lake City, Utah 84102
(801) 322-0431

Vermont Division, Inc.
13 Loomis Street, Drawer C
Montpelier, Vermont 05602
(802) 223-2348

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3218 West Cary Street
P.O. Box 7288
Richmond, Virginia 23221
(804) 359-0208

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2120 First Avenue North
Seattle, Washington 98109
(206) 283-1152

West Virginia Division, Inc.
Suite 100
240 Capital Street
Charleston, West Virginia 25301
(304) 344-3611

Wisconsin Division, Inc.
615 North Sherman Avenue
P.O. Box 8370
Madison, Wisconsin 53708
(608) 249-0487

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Milwaukee, Wisconsin 53216
(414) 461-1100

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Indian Hills Center
506 Shoshoni
Cheyenne, Wyoming 82009
(307) 638-3331

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